

**UNITED STATES DISTRICT COURT  
DISTRICT OF NEW JERSEY**

LAD JOSEPH BELL, HERMOINE KING,  
GABRIELLA BELL, and JILL JONES,  
individually and on behalf of all others  
similarly situated,

Plaintiffs,

v.

GEORGE THOMAS DAVE and GT'S  
LIVING FOODS, LLC;

Defendants.

**CIVIL ACTION NO.**

**JURY TRIAL DEMAND**

**CLASS ACTION COMPLAINT FOR VIOLATIONS OF  
THE NEW JERSEY CONSUMER FRAUD ACT AND  
FEDERAL AND STATE ANTI-RACKETEERING STATUTES**

Plaintiffs, Hermoine King, Lad Joseph Bell, Gabriella Bell, and Jill Jones (collectively “Plaintiffs”), individually and on behalf of others similarly situated and for their Class Action Complaint (“Complaint”), allege and state as follows:

**I. BACKGROUND**

1. Defendants, GEORGE THOMAS DAVE (“GT DAVE”), and GT'S LIVING FOODS, LLC (“GT'S LIVING FOODS”) (collectively “Defendants”), sell “raw,” or unpasteurized, kombucha products in the State of New Jersey and throughout the United States, including one of their signature products – Synergy Kombucha – as displayed on Defendants’ Internet website:



2. At all times relevant to this proposed statewide and nationwide class action, Defendants GT DAVE and GT'S LIVING FOODS have marketed Synergy Kombucha as a health product; however, Synergy Kombucha is actually a mislabeled alcoholic beverage that misrepresents and/or fails to disclose the true alcoholic content of the beverage to unwitting consumers, including persons under the age of 21.

3. By the time Synergy Kombucha products reach consumers in the State of New Jersey and throughout the United States, the product contains greater than 0.5% alcohol by volume ("ABV"), which makes it an alcoholic beverage under federal law and New Jersey law.

4. By failing to disclose the true alcoholic nature of the product, Defendants GT DAVE and GT'S LIVING FOODS engage in the unlawful sale of alcohol to people of all ages, including those under the age of 21 and those who should not consume alcohol for a wide range of personal, religious and/or health reasons.

5. The marketing and labeling practices engaged in by Defendants GT DAVE and GT's LIVING FOODS in order to advertise, market, distribute, and sell their Synergy Kombucha

products include affirmative misrepresentations, knowing omissions and/or unconscionable business practices, and have breached consumers' reasonable expectations, including Plaintiffs' rights, protections, and privileges under the New Jersey Consumer Fraud Act ("CFA"), the New Jersey Racketeer Influenced and Corrupt Organizations Act ("NJRICO"), and the federal Racketeer Influenced and Corrupt Organizations Act ("RICO").

6. This proposed class action seeks monetary and injunctive relief to redress the unlawful and deceptive marketing and labeling practices used by Defendants GT DAVE and GT'S LIVING FOODS to sell their Synergy Kombucha products to the public at large, including the named Plaintiffs and the members of the Class(es) defined in this Complaint.

## **II. JURISDICTION AND VENUE**

7. This Court has subject matter jurisdiction under Section 1964(c) of RICO, 18 U.S.C. § 1964(c), and 28 U.S.C. § 1331 (federal question). In addition, this Court has subject matter jurisdiction pursuant to the Class Action Fairness Act, 28 U.S.C. § 1332(d)(2)(A), because this case is a class action where the aggregate claims of all members of the proposed class(es) are in excess of \$5,000,000, exclusive of interest and costs, and Plaintiffs, as well as many members of the proposed Class(es), are citizens of states different from the state(s) of Defendants. As alleged herein, Defendants have sold hundreds of thousands, if not millions, of bottles of Synergy Kombucha.

8. Venue is proper in this District pursuant to Section 1965 of RICO, 18 U.S.C. § 1965, as well as 28 U.S.C. § 1391.

## **III. THE PARTIES**

### **A. DEFENDANT – GT DAVE**

9. Defendant GT DAVE is a resident of Beverly Hills, California.

10. Upon information and belief, Defendant GT DAVE is the sole shareholder and chief executive officer of Defendant GT'S LIVING FOODS.

11. In those capacities, Defendant GT DAVE manages and exercises control over the day-to-day activities of Defendant GT'S LIVING FOODS and he is the individual primarily responsible for the conduct of Defendant GT'S LIVING FOODS and the continuing violations of federal and state law alleged herein.

12. As a result of Defendant GT'S LIVING FOODS' sales of Synergy Kombucha, in violation of federal and state laws, Defendant GT DAVE has earned, and will continue to earn, huge sums of personal income from Defendant GT'S LIVING FOODS' illegally derived profits.

**B. DEFENDANT – GT'S LIVING FOODS**

13. Defendant GT'S LIVING FOODS is a Delaware corporation with its headquarters located at 4646 Hampton Street, Vernon, California 90058.

14. Defendant GT'S LIVING FOODS markets, advertises, distributes, and sells its Synergy Kombucha products throughout the State of New Jersey and throughout the United States.

15. Hundreds of individual retail stores located throughout every county in the State of New Jersey offer Synergy Kombucha for sale on their shelves and sell such products to consumers.

16. Defendant GT'S LIVING FOODS employs sales agents and/or merchandisers to, *inter alia*, distribute and sell Synergy Kombucha products to retail stores located in the State of New Jersey.

17. At all times relevant to this proposed class action, Defendants GT DAVE and GT'S LIVING FOODS knew or should have known that their Synergy Kombucha products contain greater than 0.5% ABV by the time it reaches consumers.

18. As a result of Defendant GT'S LIVING FOODS' sales of Synergy Kombucha, in violation of federal and state laws, Defendant GT'S LIVING FOODS has earned, and will continue to earn, huge profits.

**C. PLAINTIFF – HERMOINE KING**

19. Plaintiff HERMOINE KING is an adult who resides in Middlesex County, New Jersey.

20. In or about 2019 and 2020, Plaintiff HERMOINE KING purchased Synergy Kombucha products from retail stores in the State of New Jersey including, but not limited to, a Shop Rite supermarket located in Hillsborough, New Jersey, and a Wegmans store located in Flemington, New Jersey.

21. Plaintiff HERMOINE KING is a diabetic and is highly conscious of the foods she consumes on a daily basis, especially those foods that are high in sugar or contain alcohol.

22. Plaintiff HERMOINE KING was unaware that Synergy Kombucha contained alcohol in excess of 0.5% ABV, and she would not have purchased or consumed said products had she known the true alcohol contents of said beverages and/or that said beverages were, in fact, alcoholic beverages.

**D. PLAINTIFF – LAD JOSEPH BELL**

23. Plaintiff LAD JOSEPH BELL is an adult who resides in Morris County, New Jersey.

24. Throughout 2019 and 2020, Plaintiff LAD JOSEPH BELL purchased Synergy Kombucha products from retail stores located in the State of New Jersey including, but not limited to, a Target store located in Riverdale, New Jersey.

25. Plaintiff LAD JOSEPH BELL was unaware that Synergy Kombucha contained alcohol in excess of 0.5% ABV, and he would not have purchased or consumed said products had he known the true alcohol contents of said beverages and/or that said beverages were, in fact, alcoholic beverages.

26. At the time he purchased said products, Plaintiff LAD JOSEPH BELL resided with his three children, all of whom were under 21 years of age, and on a regular basis at least one of his children consumed the Synergy Kombucha products that Plaintiff LAD JOSEPH BELL would purchase.

**E. PLAINTIFF – GABRIELLA BELL**

27. Plaintiff, GABRIELLA BELL, is an adult who resides in Passaic County, New Jersey.

28. Throughout 2019 and most of 2020, Plaintiff GABRIELLA BELL was under 21 years of age and resided with her father, LAD JOSEPH BELL.

29. Plaintiff GABRIELLA BELL consumed Synergy Kombucha beverages purchased by her father, Plaintiff LAD JOSEPH BELL.

30. Plaintiff GABRIELLA BELL also purchased and consumed Synergy Kombucha products on her own, all while she was under the age of 21.

31. Plaintiff GABRIELLA BELL was unaware that Synergy Kombucha contained alcohol in excess of 0.5% ABV, and would not have purchased or consumed said products had

she known the true alcohol contents of said beverages and/or that said beverages were alcoholic beverages.

**F. PLAINTIFF – JILL JONES**

32. Plaintiff JILL JONES is an adult who resides in Hudson County, New Jersey.

33. Plaintiff JILL JONES actively attempts to limit her sugar intake and avoids consuming alcoholic beverages.

34. In or about 2020, Plaintiff JILL JONES purchased Synergy Kombucha products from retail stores located in the State of New Jersey.

35. Plaintiff JILL JONES was unaware that Synergy Kombucha contained alcohol in excess of 0.5% ABV, and she would not have purchased or consumed said products had she known the true alcohol contents of said beverages and/or that said beverages were, in fact, alcoholic beverages.

36. Plaintiff JILL JONES also purchased the Synergy Kombucha products to share with her minor daughter, and she would not have done so had she known said beverages were alcoholic beverages.

**IV. FACTS AND ALLEGATIONS COMMON TO ALL COUNTS**

**A. DEFENDANTS’ SYNERGY KOMBUCHA IS A MISLABLED ALCOHOLIC BEVERAGE**

37. The interstate sale of alcohol is regulated by the United States Department of Treasury’s Alcohol and Tobacco Tax and Trade Bureau (“TTB”), which has an entire Internet webpage dedicated to discussing the regulation of alcoholic kombucha. *See* TTB’s website, <https://www.ttb.gov/kombucha> (last accessed May 17, 2021).

38. According to the TTB, “[t]he term ‘kombucha’ generally refers to a fermented beverage produced from a mixture of steeped tea and sugar, combined with a culture of yeast

strains and bacteria. Some kombucha products also have fruit juice or other flavors added during production. The combination of sugar and yeast triggers fermentation, which may produce a kombucha with an alcohol content of 0.5% or more alcohol by volume.” See TTB’s website, <https://www.ttb.gov/kombucha> (last accessed May 17, 2021).

39. Also according to the TTB:

Fermentation, which is part of kombucha production, is a natural reaction when sugar and yeast are combined. Several factors can influence how much alcohol is produced by fermentation, including time and temperature.

Even though a kombucha beverage may have less than 0.5% alcohol by volume at the time of bottling, fermentation may continue in the bottle after it leaves the production facility, depending on how the kombucha beverage is made and stored. As a result, the alcohol content may increase to 0.5% or more alcohol by volume. Such a product is an alcohol beverage, which is subject to the laws and regulations governing the production, taxation, labeling, marketing, and distribution of alcohol beverages.

See TTB’s website, <https://www.ttb.gov/kombucha/kombucha-general#general> (last accessed May 17, 2021).

40. The TTB leaves no room for confusion; TTB regulations are very clear on when a kombucha product is considered an alcoholic beverage, and those regulations are conveniently summed up in this info-graphic taken from the TTB’s website:

<p>Kombucha is AT OR ABOVE 0.5% alcohol by volume at any time</p> <p> <b>TTB Regulations DO APPLY</b></p> <ul style="list-style-type: none"><li>• Visit our <a href="#">Kombucha Information and Resources</a> for TTB requirements, and other information about kombucha testing, production, distribution, and labeling.</li><li>• All kombucha also must comply with any applicable state and local requirements.</li></ul>	<p>Kombucha is NEVER at or above 0.5% alcohol by volume during production, at time of bottling, or after bottling</p> <p> <b>TTB Regulations DO NOT APPLY</b></p> <ul style="list-style-type: none"><li>• This type of kombucha must comply with all applicable Food and Drug Administration (FDA) regulations. See <a href="#">FDA.gov</a> for more information.</li><li>• All kombucha also must comply with any applicable state and local requirements.</li></ul>
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41. TTB regulations address a vast array of issues including, but not limited to, brewing, licensing, labeling, taxation, and distribution.

42. For example, if a beverage contains 0.5% ABV, it must bear a health warning statement on its label as required by Alcoholic Beverage Labeling Act of 1988. *See* 27 U.S.C. § 215 and 27 C.F.R. Part 16.

43. The above-referenced disclosure must be placed on each bottle in a conspicuous and prominent location and must state: “GOVERNMENT WARNING: (1) According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects. (2) Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery, and may cause health problems.” 27 U.S.C. § 215(a) and (b).

44. Additional regulations and disclosures apply based on an alcoholic kombucha’s designation as a malt beverage, wine, distilled spirit, or other form of alcoholic beverage, each of which is subject to its own labeling statutes and regulations.

45. Defendants’ Synergy Kombucha is the textbook example of the kombucha beverage that continues to ferment after it is bottled by the Defendants.

46. In fact, according to Defendants’ representations: “GT’s SYNERGY is authentic raw Kombucha for everyone everywhere. Fully fermented for 30 days in small batches with heirloom living cultures, GT’s SYNERGY is a probiotic powerhouse with organic acids and active enzymes to support the gut, aid digestion, and boost immune health. The perfect palate pleaser for new and experienced Kombucha drinkers alike, each bottle is naturally effervescent with 100% organic ingredients – always cultured, never compromised.” *See* Defendants’ Website, <https://gtslivingfoods.com/our-offerings/synergy-kombucha/> (last accessed May 17, 2021).

47. At no point in the manufacturing process do Defendants use any available practices or techniques to cause the fermentation process to terminate in their Synergy Kombucha beverages.

48. Once bottled in Vernon, California, Synergy Kombucha is distributed to and sold in retail stores and online by many major retailers throughout the United States, including in the State of New Jersey, and it is also sold by Defendants direct-to-consumer on their Internet website. *See* Defendants' Website's Online Order Page, <https://b2c.gtslivingfoods.com/> (last accessed May 17, 2021).

49. Defendants sell their Synergy Kombucha in more than 20 flavors including, but not limited to Gingerade, Gingerberry, Lemonade, Multi-Green, Mystic Mango, Original, Tantric Tumeric, and Trilogy.

50. Defendants intend for their Synergy Kombucha products to be sold to consumers in the State of New Jersey and have designed their Internet website to allow New Jersey consumers to search for stores by municipality or zip code that sell Synergy Kombucha products. *See* Defendants' Website, <https://gtslivingfoods.com/find-a-store/> (last accessed May 17, 2021).

51. Defendants market and sell their Synergy Kombucha "for people of all ages." *See* Defendants' Website, <https://gtslivingfoods.com/faq/raw-kombucha/> (last accessed May 17, 2021).

52. The label advertises ingredients that are considered "healthy," including "amino + polyphenols", "enzymes + probiotics", "organic & unpasteurized", "Gluten-free", "Vegan", and "Non-GMO."

53. The label also includes verbs indicative of health benefits, including: "renew . rebalance . rebuild . reclaim . rekindle . recharge."

54. The label also boasts: “During fermentation, the SCOBY transforms the tea into a bright, tangy, and naturally effervescent beverage with billions of living probiotics to support digestive and immune health.”

55. However, Defendants fail to disclose to consumers the material fact that that same fermentation process causes the beverage to exceed 0.5% ABV and become an alcoholic beverage under state and federal law.

56. Indeed, every bottle of Synergy Kombucha contains greater than 0.5% ABV by the time the product reaches consumers, thereby making Synergy Kombucha an alcoholic beverage subject to TTB regulations.

57. Based upon allegations made and evidence submitted in previous lawsuits, as well as independent research and various forms of media coverage, Defendants GT DAVE and GT'S LIVING FOODS know or should know that their Synergy Kombucha products contain greater than 0.5% ABV by the time the products reach consumers.

58. In defiance of state and federal laws and regulations, Defendants GT DAVE and GT'S LIVING FOODS ignore *all* labeling requirements for alcoholic beverages.

59. Most apparent, the Synergy Kombucha bottles fail to disclose “the nature of the product such as beer, ale, porter, stout, etc.,” as required under 27 C.F.R. § 25.141(a), and a measurement of the alcoholic content of each bottle.

60. Rather, in violation of applicable federal and state laws and regulations, the label on each Synergy Kombucha bottle minimizes and misrepresents the amount of alcohol in each bottle by simply including the following statement on the back of the bottle: “Kombucha is a fermented tea that has naturally occurring alcohol. Do not consume if you are avoiding alcohol due to pregnancy, allergies, sensitivities, or religious beliefs.”

61. Clearly, that disclosure fails to alert customers to the fact that they are, in fact, buying an alcoholic beverage.

62. Further, for the customers who actually see that disclosure, said disclosure is inadequate to advise consumers that the product contains greater than 0.5% ABV, and that they are, in fact, buying alcoholic beer.

63. To further conceal or misrepresent the nature of the product, Synergy Kombucha is sold online and in retail stores among non-alcoholic beverages, creating the appearance that Synergy Kombucha is *not* an alcoholic beverage.

64. Synergy Kombucha is commonly sold in retail stores throughout the State of New Jersey that do not hold the required liquor licenses for selling and distributing beer, thereby creating the appearance that Synergy Kombucha is *not* an alcoholic beverage.

65. In addition, Synergy Kombucha is available to be purchased by any consumer, regardless of age, thereby further creating the appearance that it is not an alcoholic beverage because alcoholic beverages are not be available for purchase by customers under 21 years of age.

**B. DEFENDANTS' MISLABELING SCHEME VIOLATES FEDERAL AND STATE LAWS AND REGULATIONS**

66. Defendants' mislabeling practices also constitute rampant violations of regulations established and enforced by the State of New Jersey's Office of the Attorney General's Division of Alcoholic Beverage Control ("NJABC").

67. N.J.A.C. § 13:2-27.1(a) adopted the federal regulations relating to labeling and standards of fill concerning spirits, wine, and malt beverages packaged for shipment in interstate or foreign commerce, specifically:

- a. Section 205(e) of the Federal Administration Act, regarding the labeling of alcoholic beverages, 27 U.S.C. § 8;
- b. 27 C.F.R. Part 4, Labeling and advertising of wine;
- c. 27 C.F.R. Part 5, Labeling and advertising of distilled spirits;
- d. 27 C.F.R. Part 7, Labeling and advertising of malt beverages;
- e. 27 C.F.R. Part 13, Labeling procedures; and
- f. 27 C.F.R. Part 16, Alcoholic beverage health warning statement.

68. The State of New Jersey also supplements federal laws and regulations with a comprehensive regulatory scheme that governs seemingly every aspect of the sale and distribution of alcoholic beverages in this State.

69. N.J.A.C. § 13:2-24.10(a) states: “No manufacturer, importer, registrant, wholesaler, distributor, or retailer shall include in any advertising material or in any advertisement, directly or indirectly, any statement, illustration, design, device, name, symbol, sign or representation that: (1) Is false or misleading .... (4) Portrays a minor or child or items or symbols which are generally associated with children or which tends to induce minors to purchase alcoholic beverages .... (5) Tends to create or give the impression that the use of an alcoholic beverage has curative or therapeutic effects or enhances athletic prowess .... (7) Is in violation of any other provisions of the Alcoholic Beverage Control Act.”

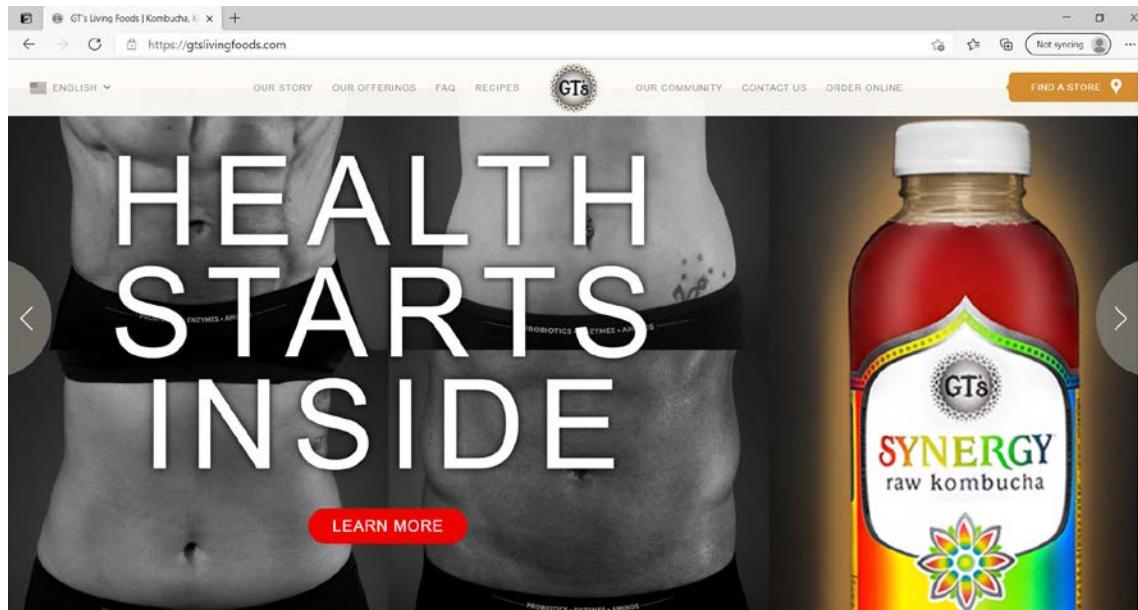
70. The labels that Defendants place on their Synergy Kombucha beverages violate each of the four subsections referenced above, for the reasons discussed in Sections III and IV of this Complaint.

71. Also, the Defendants’ Internet website and other advertisements for Synergy Kombucha beverages, whether produced by Defendants or any of their wholesalers, distributors,

or retailers, violate the four subsections highlighted above, for the reasons discussed in Sections III and IV of this Complaint.

72. Examples include, but are not limited to, the following images captured from Defendants' Internet website on May 17, 2021:

a. "Health Starts Inside"



b. "Transform Your Health"



- c. “Living Food for the Living Body ... We craft foods with living probiotics to help people live happier, healthier lives.”



73. Each violation constitutes an unconscionable business practice under the CFA.

**C. DEFENDANTS' CONDUCT CONSTITUTES AN INDICTABLE OFFENSE UNDER NEW JERSEY LAW.**

74. New Jersey state laws provide for the comprehensive regulation of importing, distributing, and selling alcoholic beverages in the State of New Jersey.

75. Title 33 of New Jersey's Revised Statutes, entitled "Intoxicating Liquors," establishes the framework for the statewide regulatory scheme.

76. N.J.S.A. § 33:1-1(b) defines an "alcoholic beverage" as "[a]ny fluid or solid capable of being converted into a fluid, suitable for human consumption, and having an alcohol content of more than one-half of one per centum (1/2 of 1%) by volume, including alcohol, beer, lager beer, ale, porter, naturally fermented wine, treated wine, blended wine, fortified wine, sparkling wine, distilled liquors, blended distilled liquors and any brewed, fermented or distilled liquors fit for use for beverage purposes or any mixture of the same, and fruit juices."

77. N.J.S.A. § 33:1-1(i) defines an “illicit beverage” as “[a]ny alcoholic beverage manufactured, distributed, bought, sold, bottled, rectified, blended, treated, fortified, mixed, processed, warehoused, possessed or transported in violation of this chapter, or on which any federal tax or tax imposed by the laws of this State has not been paid; and any alcoholic beverage possessed, kept, stored, owned or imported with intent to manufacture, sell, distribute, bottle, rectify, blend, treat, fortify, mix, process, warehouse or transport in violation of the provisions of this chapter.”

78. N.J.S.A. § 33:1-1(r) defines a “person” as “[a]ny natural person or association of natural persons, association, trust company, partnership, corporation, organization, or the manager, agent, servant, officer, or employee of any of them.”

79. N.J.S.A. § 33:1-2(a) mandates: “It shall be unlawful to manufacture, sell, possess with intent to sell, transport, warehouse, rectify, blend, treat, fortify, mix, process, bottle or distribute alcoholic beverages in this State, except pursuant to and within the terms of a license, or as otherwise expressly authorized, under this chapter.”

80. Under N.J.S.A. § 33:1-50 and N.J.S.A. § 2C:1-4, it is a fourth-degree crime for a person to manufacture, sell, or distribute any alcoholic beverage in violation of Title 33, or to possess, have custody of, or offer for sale or sell any illicit beverage.

81. Defendants GT DAVE and GT’S LIVING FOODS never possessed a license to manufacture, sell, possess with intent to sell, transport, or distribute alcoholic beverages within the State of New Jersey.

82. Neither Defendant GT DAVE, nor Defendant GT’s LIVING FOODS, nor their distributors or retailers, pay state or federal excise taxes on the sale of Defendants’ Synergy Kombucha’s mislabeled alcoholic beverages.

83. Therefore, under the above-referenced laws and regulations, all of Synergy Kombucha products sold in the State of New Jersey are illicit beverages.

84. Defendants GT DAVE and GT's LIVING FOODS know or should know, through independent testing, and allegations made and evidence submitted in other lawsuits, that Synergy Kombucha is an illicit beverage under New Jersey law and the laws of other jurisdictions.

85. Every sale of a Synergy Kombucha beverage in the State of New Jersey is a separate and distinct fourth-degree criminal offense under N.J.S.A. § 33:1-50, which makes it a crime within the State of New Jersey to:

a. Manufacture, sell, distribute, bottle, rectify, blend, treat, fortify, mix, process, warehouse or transport any alcoholic beverage in violation of that chapter; or

b. Import, own, possess, keep or store in this state alcoholic beverages with intent to manufacture, sell, distribute, bottle, rectify, blend, treat, fortify, mix, process, warehouse or transport alcoholic beverages in violation of the provisions of that chapter; or

c. Own, possess, keep or store in this state any implement or paraphernalia for the manufacture, sale, distribution, bottling, rectifying, blending, treating, fortifying, mixing, processing, warehousing or transportation of alcoholic beverages with intent to use the same in the manufacture, sale, distribution, bottling, rectifying, blending, treating, fortifying, mixing, processing, warehousing or transportation of alcoholic beverages in violation of that chapter; or

d. Aid or abet another in the manufacture, sale, distribution, bottling, rectifying, blending, treating, fortifying, mixing, processing, warehousing or transportation of alcoholic beverages in violation of that chapter; or

e. Possess, have custody of, offer for sale or sell any illicit beverage.

86. Under Title 33 of the Revised Statutes, the New Jersey Legislature made very clear that the intended remedies for illicit beverages are seizure and destruction:

a. Under N.J.S.A. § 33:1-66(b), “[a]ll alcoholic beverages, fixtures and personal property located in or upon any premises, building, yard or inclosure connected with a building, in which an illicit beverage is found, possessed, stored or kept, are hereby declared unlawful property and shall be seized, forfeited and disposed of in the same manner as other unlawful property seized under this section.”

b. Under N.J.S.A. § 33:1-66(c), “[a]ll alcoholic beverages manufactured, sold, imported or transported in violation of rules and regulations, together with any vehicle containing the same, are hereby declared unlawful property and shall be seized, forfeited and disposed of in the same manner as other unlawful property seized under this section.”

c. Under N.J.S.A. § 33:1-66(d), “[a]ny person who shall advertise, manufacture, sell or possess for sale, or cause to be advertised, manufactured, sold or possessed for sale property declared unlawful under this paragraph, shall be guilty of a [fourth-degree crime] and punished by a fine of not less than one hundred dollars (\$100.00) and not more than five hundred dollars (\$500.00), or imprisonment for not less than thirty days and not more than six months, or both.”

87. Because each such transaction is a criminal offense, punishable by fines and time in county jail, the illegal sale of illicit beverages to unwitting consumers in the State of New Jersey constitutes an unconscionable business practice under the CFA and “racketeering activity” under NJRICO and RICO.

**D. LABORATORY TESTING CONFIRMS DEFENDANTS' SYNERGY KOMBUCHA IS AN ALCOHOLIC BEVERAGE SUBJECT TO STATE AND FEDERAL STATUTES AND REGULATIONS.**

88. Comprehensive testing carried out by various parties and experts and submitted as evidence in litigation throughout the country involving GT'S LIVING FOODS has confirmed one sobering truth: Defendants' Synergy Kombucha is a mislabeled alcoholic beverage.

89. Brewing & Distilling Analytical Services, LLC is included on the TTB's list of Certified Chemists and Qualified Laboratories for the Analysis of Beer for Export. *See* TTB's website, <https://www.ttb.gov/scientific-services-division/certified-beer-chemists> (last accessed May 17, 2021).

90. As recently as March 2021, Brewing & Distilling Analytical Services, LLC tested two bottles of Defendants' Synergy Kombucha.

91. One bottle of the Trilogy flavor tested at 0.96% ABV and one bottle of Gingerade tested at 0.89% ABV. *See* 2021 Brewing & Distilling Analytical Services, LLC Test Results, attached hereto as "**Exhibit A.**"

92. Those results are consistent with tests conducted by the same laboratory in September 2018, which tested two bottles of Synergy Kombucha and arrived at the following results: (a) Gingerade – 0.99% ABV, and (b) Mystic Mango – 0.78% ABV. *See* 2018 Brewing & Distilling Analytical Services, LLC Test Results, attached hereto as "**Exhibit B.**"

93. The 2018 and 2021 test results from Brewing & Distilling Analytical Services, LLC are consistent with other testing results on Synergy Kombucha in recent years.

94. Those results were corroborated and amplified by far more extensive testing conducted and/or reviewed by Blake Ebersole ("Ebersole"), one of the foremost experts in

kombucha alcohol testing, in 2019. *See* 2019 Ebersole Declaration, attached hereto as “**Exhibit C**”.

95. Ebersole is a scientific consultant and trained chemist with over 14 years of experience in technical affairs and quality assurance of natural products, foods, and dietary supplements. He has managed quality control and testing programs for more than 30 firms in the food and dietary supplement industry. Ebersole was a member of the Association of Official Agricultural Chemists’ International Ethanol in Kombucha Working Group in late 2015 and 2016, which was formed to establish the standard method of performance requirement (SMPR) for candidate methods. After the SMPR was established, Ebersole was selected to participate in the Expert Review Panel (ERP) for ethanol analysis in kombucha, which also included scientist representatives from the TTB, Coca-Cola, and Merieux Nutrisciences, a contract laboratory that specializes in food testing. As a member of the kombucha ERP, Ebersole reviewed the existing methods for analysis of alcohol in various consumer goods and reviewed validation data for several methods submitted to the ERP for review. In 2017, Ebersole received the award for 2016-2017 Expert Review Panel Member of the Year from AOAC International for his participation and efforts on the ethanol in kombucha expert panel. Ebersole has published more than 25 peer-reviewed academic journal and conference papers in the area of natural product chemistry, including five peer-reviewed papers relating to the analysis of ethanol in kombucha. Ebersole’s training and experience is outlined in great detail in Paragraphs 2-10 of **Exhibit C**. *See* 2019 Ebersole Declaration, ¶¶ 2-10.

96. On May 20, 2019, Ebersole issued a certification, or declaration, in a lawsuit filed in the U.S. District Court for the Central District of California entitled Tortilla Factory, LLC v. GT's Living Foods, LLC, Case No. 2:17-cv-07539-FMO-GJS.

97. In that case, after testing 29 samples of Synergy Kombucha in 2019, Ebersole found that “[a]ll 29 [Synergy Kombucha] samples tested contained greater than 0.5% alcohol by volume (% ABV), with results ranging from 0.64 – 1.85% ABV. This is between 28% and 370% higher than the legal limit of 0.5% ABV.” *See* 2019 Ebersole Declaration, ¶ 12(a).

98. In his declaration, Ebersole provided an expert opinion that Defendants’ kombucha products, including Synergy Kombucha, contain more than 0.5% ABV. *See* Ebersole Declaration, ¶ 13.

99. Ebersole based his findings on a wide range of testing spanning the period from 2015 through 2019, by various laboratories throughout the United States, some of which was conducted by him and the remainder being conducted by others. *See* Ebersole Declaration, ¶ 12.

100. All of the above-referenced testing involved bottles of Synergy Kombucha purchased directly from retailers’ refrigerated shelves in non-alcoholic sections of those stores. The samples were transported in refrigerated conditions to ensure the samples were kept cold at all times.

101. Therefore, the testing procedures replicate the conditions that would be experienced by the average consumer who purchases a Synergy Kombucha product and consumes it prior to the expiration date listed on the bottle.

102. Despite the overwhelming data, Defendant GT DAVE refuses to adopt a brewing process that would prevent Synergy Kombucha from ever exceeding 0.5% ABV, which he has made abundantly clear in many public statements on the issue.

103. Rather than bring Defendant GT’S LIVING FOODS’ operations into compliance with applicable laws and regulations, Defendant GT DAVE spends significant time lobbying Congress to increase the threshold for regulation from 0.5% ABV to 1.25% ABV. *See*

Kombucha Brewers International's website, <https://kombuchabrewers.org/lobbying/> (last accessed May 17, 2021).

**V. CLASS ACTION ALLEGATIONS**

104. Plaintiffs repeat and reallege the allegations set forth in the previous paragraphs of this Complaint as if they were set forth in full herein.

105. Pursuant to Rule 23 of the Federal Rules of Civil Procedure, Plaintiffs bring this action on behalf of themselves, respectively, and all other persons similarly situated.

106. The New Jersey Class is defined to include:

All persons or entities who, within the applicable statute of limitations, purchased a GT'S LIVING FOODS brand Synergy Kombucha product while physically located within the State of New Jersey.

107. The Nationwide Class is defined to include:

All persons or entities who, within the applicable statute of limitations, purchased a GT'S LIVING FOODS brand Synergy Kombucha product while physically located within the United States.

108. The members of the proposed Class(es), being geographically disbursed and numbering in thousands, are so numerous that joining all of them is impracticable.

109. Plaintiffs' claims are typical of the claims of the Class(es) because the claims are based on the same legal and remedial theories.

110. Plaintiffs will fairly and adequately protect the interests of all members of the Class(es) in the prosecution of this action and in the administration of all matters relating to the claims stated herein.

111. Plaintiffs are similarly situated with, and have suffered similar injuries as, the members of the Class(es) that they seek to represent.

112. Plaintiffs have retained counsel experienced in complex litigation and class action cases.

113. Neither Plaintiffs nor counsel have any interest that may cause them to not vigorously pursue this action.

114. A class action is superior to other available methods for the fair and efficient adjudication of the controversy, because:

a. The damages sustained by individual members of the Class(es) are in amounts that may be too small to justify the expense of separate lawsuits. The individual claims in the aggregate, however, make litigation financially feasible;

b. Concentration of the litigation concerning this matter in this Court is desirable;

c. Failure of justice will result from the absence of a class action; and

d. The Class(es) and the difficulties likely to be encountered in the management of this class action are not great.

115. There are questions of law and fact common to the members of the Class(es) that predominate over questions of law or fact affecting only individual members. These questions of law or fact common to all members of the Class(es) include, but are not limited to:

a. Whether the Synergy Kombucha labels violate state and federal laws; and

b. Whether the distribution, possession, and sale of Synergy Kombucha in New Jersey violates state and/or federal laws and regulations; and

c. Whether Defendants' misrepresentations, knowing omissions, and/or

unconscionable business practices violate the CFA; and

d. Whether Defendants' conduct violates NJRICO and/or RICO; and

e. Whether injunctive relief is required to halt Defendant's continuous violations of state and federal law.

**COUNT ONE**  
**(Violations of New Jersey CFA)**

116. Plaintiffs repeat and reallege the allegations set forth in the previous paragraphs of this Complaint as if they were set forth in full herein. This claim alleging violations of the CFA, which is brought by Plaintiffs on behalf of themselves and the members of the New Jersey Class, is asserted against Defendant GT DAVE and Defendant GT'S LIVING FOODS.

117. Numerous controlling state and federal cases recite and explain the broadly remedial aims of the CFA.

118. Plaintiffs and the members of the Class(es) are consumers within the protections of the CFA.

119. Defendants' labels on their Synergy Kombucha beverages, as previously described, violated the CFA as a matter of law.

120. Defendants violated the CFA by providing affirmative misrepresentations regarding the alcohol content of the Synergy Kombucha products they sold to Plaintiffs and the members of the Class(es).

121. Defendants' failures to disclose the alcohol contents of their Synergy Kombucha beverage, and its classification as an alcoholic beverage, as previously described and as required by law, also constitute knowing omissions, suppressions, and/or concealments of material facts, made with the intent that Plaintiffs and the members of the Class(es) rely upon such concealments, suppressions, or omissions regarding the alcohol content of Synergy Kombucha and its proper classification as an alcoholic beverage.

122. Defendants' clear and deliberate violations of state and federal laws regarding labeling, distributing, and selling alcoholic beverages and mandatory disclosures related thereto, previously described, also evidence a lack of good faith, honesty in fact, and observance of fair dealing so as to constitute unconscionable commercial practices, in violation of the CFA.

123. Plaintiffs and the members of the Class(es) suffered an ascertainable loss when they purchased Synergy Kombucha beverages that they otherwise would not have purchased.

124. Alternatively, Plaintiffs and Class members suffered an ascertainable loss when they unwittingly purchased the illicit Synergy Kombucha alcoholic beverages, which have no legal market value on any legitimate markets.

125. Because Defendant's wrongful and illegal conduct resulted in an illegal sale of an alcoholic beverage to consumers, Plaintiffs and the members of the Class(es) are entitled to recovery of the sale price and all other damages recoverable under applicable common and statutory law.

126. Defendants' wrongful and illegal conduct is causally related to the Plaintiffs' and members of the Class(es) ascertainable losses.

**COUNT TWO**  
**(Violations of NJRICO)**

127. Plaintiffs repeat and reallege the allegations set forth in the previous paragraphs of this Complaint as if they were set forth in full herein. This claim alleging violations of NJRICO, which is brought by Plaintiffs on behalf of themselves and the members of the New Jersey Class, is asserted against Defendant GT DAVE and Defendant GT'S LIVING FOODS.

128. Chapter 41 of New Jersey's Criminal Code, Title 2C, is titled "Racketeering," and is commonly referred to as "NJRICO."

129. At all times relevant to this class action, Defendants GT DAVE and GT'S LIVING FOODS are each a "person," as that term is defined by N.J.S.A. § 2C:41-1(b) to include "any individual or entity or enterprise as defined herein holding or capable of holding a legal or beneficial interest in property."

130. At all times relevant to this class action, Defendants GT DAVE and GT'S LIVING FOODS, acting together and individually, were engaged in "trade or commerce" as that term is defined by N.J.S.A. § 2C:41-1(h) to include "all economic activity involving or relating to any commodity or service."

131. At all times relevant to this class action, Defendants GT DAVE and GT'S LIVING FOODS, acting together and collectively, comprised and continue to comprise an "enterprise" as that term is defined by N.J.S.A. § 2C:41-1(c) to include "any individual, sole proprietorship, partnership, corporation, business or charitable trust, association, or other legal entity, any union or group of individuals associated in fact although not a legal entity, and it includes illicit as well as licit enterprises and governmental as well as other entities."

132. In the alternative, Defendant GT'S LIVING FOODS, which is a corporation, constituted an "enterprise" as that term is defined by N.J.S.A. § 2C:41-1(c) (quoted above).

133. At all times relevant to this class action, Defendants GT DAVE and GT'S LIVING FOODS violated N.J.S.A. § 2C:41-2(c) by engaging in the following prohibited activities: Defendant GT DAVE, being a person who was employed by or associated with GT'S LIVING FOODS, an enterprise, conducted or participated, directly or indirectly, in the conduct of that enterprise's affairs through a pattern of racketeering activity.

134. In the alternative, Defendants GT DAVE and GT'S LIVING FOODS, both being persons who were employed by or associated with Defendants GT DAVE and GT's LIVING

FOODS, which constituted an association-in-fact enterprise, conducted or participated, directly or indirectly, in the conduct of that enterprise's affairs through a pattern of racketeering activity.

135. At all times relevant to this class action, Defendants GT DAVE and GT's LIVING FOODS engaged in a pattern of racketeering activity, as defined by N.J.S.A. § 2C:41-1(d), by:

- a. Engaging in at least two incidents of racketeering conduct, both of which have occurred on an ongoing basis during the past four years and will continue to occur; and
- b. Embracing in criminal conduct that has either the same or similar purposes, results, participants, or victims or methods of commission or are otherwise interrelated by distinguishing characteristics and are not isolated incidents.

136. Specifically, Defendant committed the following racketeering activities, as enumerated in N.J.S.A. § 2C:41-1(a)(1):

- a. Violations of Title 33 of the Revised Statutes including, but not limited to, the following:
  - i. N.J.S.A. § 33:1-2(a), by manufacturing alcoholic beverages out-of-state and causing those alcoholic beverages to be sold, possessed with the intent to sell, transported, warehoused, and/or distributed in the State of New Jersey, by individuals and entities without the required licenses to engage in such conduct; and
  - ii. N.J.S.A. § 33:1-10, by, without the required license, manufacturing alcoholic beverages out-of-state and selling and distributing, or causing to be sold and distributed, those alcoholic beverages to

retailers and wholesalers in the State of New Jersey that also lack the required licenses; and

- iii. N.J.S.A. § 33:1-11, by, without the required license, selling and distributing, or causing to be sold and distributed, alcoholic beverages to retailers and wholesalers in the State of New Jersey; and
- iv. N.J.S.A. § 33:1-12, by selling alcoholic beverages, or causing alcoholic beverages to be sold, in retail establishments which are not licensed to sell alcoholic beverages.

b. Violations of Title 54 of the Revised Statutes, specifically, N.J.S.A. § 54:41-1 *et seq.*, the “Alcoholic Beverage Tax Law,” and related sections of Title 54, by failing to collect and remit to the State of New Jersey all applicable state taxes and by failing to advise retail stores of the true nature of Defendants’ beverages, as a result of which the retailers failed to collect all required taxes.

c. Theft and all crimes defined in Chapter 20 of Title 2C of the New Jersey Statutes, specifically Theft by Deception, in violation of N.J.S.A. § 2C:20-4.

d. Forgery and fraudulent practices and all crimes defined in chapter 21 of Title 2C of the New Jersey Statutes, specifically N.J.S.A. § 2C:21-7(d), by selling, offering, or exposing for sale adulterated or mislabeled commodities, and N.J.S.A. § 2C:21-7(e), by making a false or misleading statement in any advertisement addressed to the public or to a substantial segment thereof for the purpose of promoting the purpose or sale of property or services.

137. Additionally, Defendants committed the following racketeering activities, as enumerated under N.J.S.A. § 2C:41-1(a)(2), conduct defined as “racketeering activity” under Title 18, U.S.C. § 1961(1)(A), (B) and (D), including:

a. Mail Fraud, in violation of 18 U.S.C. § 1341, by having devised or intending to devise any scheme or artifice to defraud, or for obtaining money or property by means of false or fraudulent pretenses, representations, or promises, for the purpose of executing such scheme or artifice or attempting so to do, places in any post office or authorized depository for mail matter, any matter or thing whatever to be sent or delivered by the Postal Service, or deposits or causes to be deposited any matter or thing whatever to be sent or delivered by any private or commercial interstate carrier, or takes or receives therefrom, any such matter or thing, or knowingly causes to be delivered by mail or such carrier according to the direction thereon, or at the place at which it is directed to be delivered by the person to whom it is addressed, any such matter or thing. As alleged in this Complaint, Defendants and/or persons acting on their behalf used the mails to disseminate advertising and marketing materials for Synergy Kombucha beverages.

b. Wire fraud, in violation of 18 U.S.C. § 1343, by having devised or intending to devise any scheme or artifice to defraud, or for obtaining money or property by means of false or fraudulent pretenses, representations, or promises, transmits or causes to be transmitted by means of wire, radio, or television communication in interstate or foreign commerce, any writings, signs, signals, pictures, or sounds for the purpose of executing such scheme or artifice. As alleged in this Complaint, Defendants and/or persons acting on their behalf used interstate wire facilities, including the Internet, to disseminate advertising and marketing materials for Synergy Kombucha beverages.

c. Violations of the Travel Act, 18 U.S.C. § 1952(a) & (b), by using the mails or any facility in interstate commerce, with intent to distribute the proceeds of any unlawful activity or otherwise promote, manage, establish, carry on, or facilitate the promotion,

management, establishment, or carrying on of any unlawful activity, namely, a business enterprise involving liquor on which the Federal excise tax has not been paid.

138. Plaintiffs and the members of the New Jersey Class have been damaged in their business or property by reason of Defendants' violations of N.J.S.A. § 2C:41-2 and, therefore, they are entitled to bring this proposed class action under N.J.S.A. § 2C:41-4(c) and to recover the damages and other remedies enumerated therein.

**COUNT THREE**  
**(Violations of RICO)**

139. Plaintiffs repeat and reallege the allegations set forth in the previous paragraphs of this Complaint as if they were set forth in full herein. This claim alleging violations of RICO, which is brought by Plaintiffs on behalf of themselves and the members of the Nationwide Class, is asserted against Defendant GT DAVE.

140. Title 18, United States Code, Chapter 96, Sections 1961-1968, is known as "RICO."

141. At all times relevant to this class action, Defendant GT DAVE was and is a "person," as that term is defined by 18 U.S.C. § 1961(3).

142. At all times relevant to this class action, Defendant GT'S LIVING FOODS constituted an "enterprise" as that term is defined by 18 U.S.C. § 1961(4).

143. At all times relevant to this class action, Defendant GT DAVE violated 18 U.S.C. § 1962(c) by being a person who was employed by or associated with GT'S LIVING FOODS, an enterprise, conducted or participated, directly or indirectly, in the conduct of that enterprise's affairs through a pattern of racketeering activity.

144. At all times relevant to this class action, Defendant GT DAVE and/or persons acting on his behalf or at his best, engaged in a pattern of racketeering activity, as defined in 18 U.S.C. § 1961(5) by committing the following racketeering activities, as enumerated in 18 U.S.C. § 1961(1):

a. Mail Fraud, in violation of 18 U.S.C. § 1341, by having devised or intending to devise any scheme or artifice to defraud, or for obtaining money or property by means of false or fraudulent pretenses, representations, or promises, for the purpose of executing such scheme or artifice or attempting so to do, places in any post office or authorized depository for mail matter, any matter or thing whatever to be sent or delivered by the Postal Service, or deposits or causes to be deposited any matter or thing whatever to be sent or delivered by any private or commercial interstate carrier, or takes or receives therefrom, any such matter or thing, or knowingly causes to be delivered by mail or such carrier according to the direction thereon, or at the place at which it is directed to be delivered by the person to whom it is addressed, any such matter or thing. As alleged in this Complaint, Defendants and/or persons acting on their behalf used the mails to disseminate advertising and marketing materials for Synergy Kombucha beverages.

b. Wire fraud, in violation of 18 U.S.C. § 1343, by having devised or intending to devise any scheme or artifice to defraud, or for obtaining money or property by means of false or fraudulent pretenses, representations, or promises, transmits or causes to be transmitted by means of wire, radio, or television communication in interstate or foreign commerce, any writings, signs, signals, pictures, or sounds for the purpose of executing such scheme or artifice. As alleged in this Complaint, Defendants and/or persons acting on their

behalf used interstate wire facilities, including the Internet, to disseminate advertising and marketing materials for Synergy Kombucha beverages.

c. Violations of the Travel Act, 18 U.S.C. § 1952(a) & (b), by using the mails or any facility in interstate commerce, with intent to distribute the proceeds of any unlawful activity or otherwise promote, manage, establish, carry on, or facilitate the promotion, management, establishment, or carrying on of any unlawful activity, namely, a business enterprise involving liquor on which the Federal excise tax has not been paid.

134. Plaintiffs and the members of the Nationwide Class have been damaged in their business or property by reason of Defendant GT DAVE's violations of 18 U.S.C. § 1962(c) and, therefore, they are entitled to bring this proposed class action under 18 U.S.C. § 1964(c) and to recover the damages and other remedies enumerated therein.

**WHEREFORE**, Plaintiffs request that the Court issue an Order and grant Judgment to Plaintiffs and the members of the Class(es) as follows:

- a. Certifying this action as a Class Action under Rule 23 of the Federal Rules of Civil Procedure;
- b. Naming the Plaintiffs as the representatives of the members of the Class(es);
- c. Appointing Wilentz, Goldman & Spitzer, P.A. and Rivers Law Firm as Class Counsel for all purposes in this action;
- d. Granting Plaintiffs and the members of the Class(es) statutory, common law, and punitive damages, and applicable pre- and post-judgment interest, in full recompense for their damages;
- e. Entering judgment according to the declaratory relief sought;

f. Granting Plaintiffs and the members of the Class(es) such other and further relief, including, without limitation, injunctive, and equitable relief, as the Court deems just in all the circumstances; and

g. Granting Class Counsel an award of their attorneys' fees and costs of suit, reflective of the work done in prosecuting this action, the time spent, the effort, and hard costs invested, and results obtained, in light of the Court's judgment informed by awards in other similar cases of comparable difficulty and complexity.

h. Granting Plaintiffs an Incentive or Service Award reflective of the work done in prosecuting this action, the time spent, the effort, and hard costs invested, and results obtained, in light of the Court's judgment informed by awards in other similar cases of comparable difficulty and complexity.

**JURY DEMAND**

Plaintiffs hereby demand a trial by a jury of six (6) jurors as to all issues raised in these pleadings.

**WILENTZ, GOLDMAN & SPITZER, P.A.**  
JOHN E. KEEFE, JR., ESQ.  
CHRISTOPHER J. KEATING, ESQ.

DATED: May 26, 2021

By: /s/ John E. Keefe, Jr.  
JOHN E. KEEFE, JR., ESQ.

125 Half Mile Road, Suite 100  
Red Bank, NJ 07701  
Telephone: (732) 855-6061  
Facsimile: (732) 726-4861  
-and-

KEVIN P. RODDY, ESQ.  
90 Woodbridge Center Drive, Suite 900  
Woodbridge, NJ 07095  
Telephone: (732) 636-8000  
Facsimile: (732) 726-6686

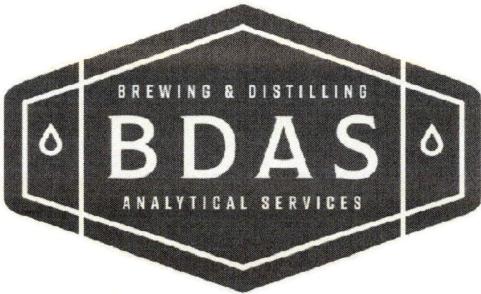
-and-

DATED: May 26, 2021

By: /s/ Noel Rivers  
NOEL RIVERS, ESQ.

**RIVERS LAW FIRM**  
77 Hudson Street, 1<sup>st</sup> Floor  
Hackensack, NJ 07601

# **EXHIBIT A**



1141 Red Mile Road, Suite 202,  
Lexington, KY 40504.

859-278-2533 [www.bdastesting.com](http://www.bdastesting.com)

## BDAS, LLC. TEST RESULTS 2021

LAB SAMPLE #: 21-0467-0468

PRODUCT: Two Samples, Coded Below

TYPE OF PACKAGE: 2 x 16 fl. oz. bottles each

DATE SAMPLE RECEIPT/ENTRY: 03-05-2021

DATE OF THIS REPORT OF RECORD: 03-17-2021

COMPANY: Rivers Law Firm LLC

77 Hudson Street

Hackensack, NJ 07601

ATTENTION: Noel Rivers, Esq.; 201.744.4321

E-MAIL: [noel@riverslaw.net](mailto:noel@riverslaw.net)

PAGE 1 OF 1

### Brewer's Specifications (Non-Beer): Alcohol, Total Acidity, Color, and pH

Sample ID/ Parameter	0467 GT's Living Foods Kombucha, Trilogy	0468 GT's Living Foods Kombucha, Gingerade
Alcohol by Volume, (% 20°C)	0.96	0.89
Alcohol by Volume, (% 60°F)*	0.95	0.88
Alcohol by Weight, (% 20°C)	0.75	0.70
Specific Gravity	1.01871	1.01713
Original Gravity (°P)	6.62	6.10
OG as SG	1.02619	1.02409
Real Extract (°P)	5.13	4.71
Apparent Extract (°P)	4.76	4.37
Real Degree of Fermentation (%)	23.18	23.38
Apparent Degree Fermentation (%)	28.06	28.38
Calories (per 12 fl. oz.) **	92.92	85.47
Total Acidity, as % Acetic Acid	1.1	0.8
Color (SRM)	13.86	11.32
pH	3.1	2.98

\*TTB sometimes requires 60 °F values on volume.

\*\*Calories not corrected for true ash content.

Specific Report Comments: Parameters tested via TTB approved methods.

Signature/Date

 3-17-2021

Haley Spurlin, B.Sc. for BDAS, LLC.

# **EXHIBIT B**

**BREWING & DISTILLING  
ANALYTICAL SERVICES LLC**

 1141 Red Mile Road, Suite 202, Lexington, KY 40504  
 Tel: 859-278-2533/www.alcbevtesting.com

**Brewing and Distilling Analytical Services – Test Results – 2018**
**Lab Sample #:** 18-2724-5

**Product:** Two Kombucha Samples, coded below

**Type of Package:** 2 or ^3 x 473 ml bottles each

**Date Sample Receipt/Entry:** 09-10-18

**Date of this Report of Record:** 09-19-18

**Company:** Rivers Law Firm LLC

77 Hudson Street

Hackensack, NJ 07601

**Attention:** Noel Rivers, Esq.; 201.744.4321

**E-mail:** [noel@riverslaw.net](mailto:noel@riverslaw.net)
**Page 1 of 1**
**Brewer's Specifications (Non-Beer): Alcohol, Total Acidity, Color, and pH**

Sample ID/ Parameter	2724 GT's Living Foods Kombucha: Mystic Mango	2725 GT's Living Foods Kombucha: Gingerade
Alcohol by Volume, (% 20°C)	0.78	0.99
Alcohol by Volume, (% 60°F)*	0.77	0.98
Alcohol by Weight, (% 20°C)	0.61	0.77
Specific Gravity	1.01997	1.01765
Original Gravity (°P)	6.58	6.42
OG as SG	1.02603	1.02538
Real Extract (°P)	5.38	4.87
Apparent Extract (°P)	5.08	4.50
Real Degree of Fermentation (%)	18.87	24.67
Apparent Degree Fermentation (%)	22.83	29.91
Calories (per 12 fl. oz.) **	91.38	88.09
Total Acidity, (% as Acetic Acid)	0.6	0.8
Color (SRM)	8.19	11.93
pH	3.17	2.89

\*TTB sometimes requires 60 °F values on volume.

\*\*Calories not corrected for true ash content.

**Specific Report Comments:** Parameters tested via TTB approved methods. Kombucha which has a measured alcohol content at or above 0.5% ABV at any point during production or following packaging is subject to TTB licensing regulations. All products which never exceed 0.5% ABV are subject to FDA regulations under HFA-305.

Signature/Date

 09/19/18

Jessi N. Bentley, B.Sc. for BDAS, LLC.

# **EXHIBIT C**

1 Stephen D. Weisskopf, Esq. (State Bar No. 213596)  
2 [sweisskopf@levatolaw.com](mailto:sweisskopf@levatolaw.com)

3 Christopher E. Stiner, Esq. (State Bar No. 276033)  
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5 LEVATOLAW, LLP  
6 2029 Century Park East, Suite 2910  
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8 Telephone: (310) 734-2026  
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10 Michael L. Cohen, Esq. (State Bar No. 206253)  
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12 Michael L. Cohen, A Professional Law Corporation  
13 2300 Westwood Boulevard, Suite 200  
14 Los Angeles, CA 90064  
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16 Facsimile: (213) 403-6405

17 Attorneys for Plaintiff  
18 TORTILLA FACTORY, LLC

19 **UNITED STATES DISTRICT COURT**

20 **FOR THE CENTRAL DISTRICT OF CALIFORNIA**

21 TORTILLA FACTORY, LLC,

22 Case No. 2:17-cv-07539-FMO-GJS

23 Plaintiff,

24 **DECLARATION OF BLAKE  
25 EBERSOLE**

26 vs.

27 GT'S LIVING FOODS, LLC, and DOES  
28 1-10,

Judge: Fernando M. Olguin

Defendants.

1       1. Tortilla Factory LLC retained me as an expert in chemical analytical  
2 testing of natural products. Tortilla Factory hired me to perform an analysis of  
3 ethanol and total sugars in GT's Enlightened Kombucha and Enlightened Synergy  
4 drinks (hereafter referred to as GT's Kombucha). I make this declaration of my own  
5 personal knowledge and, if called as an expert witness, I could and would testify  
6 competently to the matters stated herein.

7              **Expert Qualifications**

8       2. I am a scientific consultant and trained chemist with 14 years' experience in technical affairs and quality assurance of natural products, foods, and dietary supplements. Over this time, I have managed quality control and testing programs for more than 30 firms in the food and dietary supplement industry.

9       3. I am a participant in the standards development activities for ethanol analysis in kombucha. I was a voluntary member of the AOAC International<sup>1</sup> Ethanol in Kombucha Working Group in late 2015 and 2016 that was formed to establish the standard method performance requirements (SMPR) for candidate methods. I reviewed and voted to revise and approve Standard Method Performance Requirements (SMPR) drafted through voluntary stakeholder consensus. The SMPR were voted by kombucha industry affiliates of AOAC, to be the official criteria for approving ethanol in kombucha analytical methods as Official Methods. The Working Group approved AOAC SMPR 2016.001 in early 2016.

10      4. After SMPR were established, I was selected to participate in the Expert Review Panel (ERP) for ethanol analysis in kombucha. I am one of the 7

24              

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<sup>1</sup> The legal name since 1991 is AOAC INTERNATIONAL. In 1884 the organization was established as the Association of Official Agricultural Chemists, our heritage. Later on, the name changed to the Association of Official Analytical Chemists, a reflection of our membership. Subsequently, the membership changed to include microbiologists, food science personnel as well as chemists. We also became an organization of international influence and membership, so, it was decided to change to the current legal name AOAC INTERNATIONAL. While you may have seen that "AOAC" stands for THE ASSOCIATION OF ANALYTICAL COMMUNITIES, this is only a statement to encompass all the scientific disciplines involved in doing the work of the Association, not a legal name.

1 scientific experts on the ERP that includes others from the U.S. Alcohol and  
2 Tobacco Tax and Trade Bureau (TTB), the regulatory authority for alcoholic  
3 beverages in the United States, as well as scientists from Coca-Cola and Merieux  
4 NutriSciences, a contract laboratory who specializes in food testing. The AOAC  
5 ERP also included Hannah Crum, Kombucha Brewer's International (KBI), as an  
6 industry stakeholder. (KBI claims to be one of the largest kombucha industry trade  
7 organizations in the world.) Organizational affiliates supporting this effort included  
8 kombucha industry stakeholders such as KBI, GT's Kombucha, Health-Ade, and  
9 Kevita (see reference 6).

10       5. According to the AOAC website, for participation on ERP, interested  
11 scientists are invited to submit their curriculum vitae (CV) for consideration.  
12 Advisory panel, stakeholder panel, and working group members may make  
13 recommendations to AOAC for ERP members. All CVs are reviewed and evaluated  
14 for expertise by the AOAC Chief Scientific Officer (CSO) and then to the AOAC  
15 Official Methods Board for formal review. The composition of the ERP must be  
16 fulfilled with qualified subject matter experts representing various perspectives.  
17 ERP members must affirm to adhere to rigorous standards of objective and scientific  
18 integrity in order to participate.

19       6. As part of the kombucha ERP, I have reviewed the existing methods for  
20 analysis of alcohol in foods, and have also reviewed validation data for several  
21 methods submitted to the ERP for review, that can be useful for quantification of  
22 ethanol in kombucha.

23       7. I also participated in the method development process by coordinating  
24 the validation of a method that is widely used for ethanol in various foods and  
25 beverages, and later determining through several validation studies that it is reliable  
26 for purposes of quantification of ethanol in kombucha. As a member of the AOAC  
27 Expert Review Panel, I was not permitted to review, vote, or otherwise influence the

1 review of the headspace GC-FID method that I submitted, as per AOAC Expert  
2 Panel requirements.

3       8. In 2015 and 2016, I independently conducted the verification of fit for  
4 purpose of a method employed by Covance Laboratories in Madison, Wisconsin.  
5 The method uses gas chromatography with flame ionization detection (GC-FID)  
6 with headspace autosampling for the quantification of ethanol in a variety of  
7 products and compositions. In spring of 2016, I conducted and single laboratory  
8 validation of this GC-FID method, according to AOAC guidelines for SLV. During  
9 summer 2016, I submitted this method to the Expert Panel in 2016, and the method  
10 was approved to be Official Method of Analysis (OMA) AOAC 2016.12 on  
11 September 18, 2016. OMA status was first action, granted upon the first submission  
12 to the Panel. This SLV validation study was later submitted for peer review to the  
13 Journal of AOAC International.

14       9. In 2017, I received the award for 2016-2017 Expert Review Panel  
15 Member of the Year from AOAC International for my participation and efforts on  
16 the ethanol in kombucha Expert Panel. Subsequently, in 2017 and 2018 I  
17 coordinated the multi-lab validation of AOAC Official Method 2016.12, which was  
18 published in peer review in the Journal of AOAC International in 2018, and  
19 reviewed by the Expert Panel. Further details supporting the validity of this method  
20 is summarized in the following sections, and in references 1-3. I have also  
21 coordinated and reviewed the testing of ethanol in more than 100 commercial  
22 kombucha samples since 2015.

23       10. I also serve on various technical and standards committees for natural  
24 products quality for ASTM International and the American Herbal Products  
25 Association. I have published more than 25 peer-reviewed academic journal and  
26 conference papers in the area of natural product chemistry, including five peer-

27

28

1 reviewed papers relating to the analysis of ethanol in kombucha. A true and correct  
2 copy of my CV is attached hereto as Exhibit 4.

3 **Statement of Opinions**

4 11. Tortilla Factory LLC retained me as an expert in chemical analytical  
5 testing of natural products. Tortilla Factory hired me to perform an analysis of  
6 ethanol and total sugars in GT's Enlightened Kombucha and Enlightened Synergy  
7 drinks (hereafter referred to as GT's Kombucha).

8 12. Based on the results of several studies and extensive experience in  
9 analytical testing of kombucha and other natural products, I determined that GT's  
10 Kombucha sold in the U.S. contains more than 0.5% alcohol by volume:

11 (a) I conducted testing in February 2019 using AOAC Official  
12 Method of Analysis AOAC 2016.12, a gas chromatography with  
13 flame ionization detection (GC-FID) with headspace  
14 autosampling, run by Covance-Eurofins Laboratory. All 29 GT's  
15 Kombucha samples tested contained greater than 0.5 percent  
16 alcohol by volume (% ABV), with results ranging from of 0.64 -  
17 1.85% ABV. This is between 28% and 370% higher than the  
18 legal limit of 0.5% ABV. Attached hereto as Exhibit 1 are true  
19 and correct copies of the lab reports.

20 (b) I conducted testing in December 2015 and July 2016 using the  
21 same analytical method (AOAC 2016.12) at Covance on 21 GT's  
22 Kombucha samples. All 21 GT's Kombucha samples contained  
23 greater than 0.5% ABV, ranging from 1.09 - 1.96% ABV. This is  
24 between 218 and 392% higher than the legal limit of 0.5% ABV  
25 (See Exhibit 1).

26 (c) I conducted testing in March 2016 within a method verification  
27 and round-robin study that yielded four candidate methods from

1 three laboratories (including the headspace GC-FID method). I  
2 found consistency in results among the laboratories on four GT's  
3 Kombucha samples that all contained greater than 0.5% ABV. In  
4 this round of testing, alcohol in GT's Kombucha ranged from  
5 1.27-1.51% ABV. This is between 254 and 302% higher than the  
6 legal limit of 0.5% ABV. Attached hereto as Exhibit 5 is a true  
7 and correct copy of the study.

8 (d) Chris Stiner provided test results to me that were reported by  
9 Enartis Vinquiry in 2017 and 2018 using GC-FID to analyze 46  
10 bottles of GT's Kombucha. The samples contained an average of  
11 1.16% ABV, ranging from 0.60 to 2.05%. This is between 20  
12 and 410% higher than the legal limit of 0.5% ABV. Attached  
13 hereto as Exhibit 7 are true and correct copies of those lab  
14 reports.

15 (e) The foregoing results obtained for alcohol in GT's Kombucha  
16 are consistent with results independently reported by others in  
17 the published literature (see references 5,6,7). For example, in  
18 2015 John Edwards, Ph.D. from Process NMR Associates  
19 analyzed three samples of GT's Kombucha in 2015 using a  
20 nuclear magnetic resonance method. He found all thee samples  
21 had alcohol levels higher than 0.5% ABV, ranging from 1.23-  
22 1.40 % ABV, reflecting alcohol levels 246%-280% higher than  
23 the 0.5% limit. In 2017, Daniel Armstrong, Ph.D. and colleagues  
24 at the University of Texas analyzed eight samples of GT's  
25 Kombucha using headspace GC-FID, and found they all  
26 exceeded 0.5% alcohol, reporting a range of 1.1%-1.8% ABV in  
27 the drinks. This reflects an amount that is 220%-360% higher  
28

than the 0.5% ABV limit for non-alcoholic beverages.

13. In my professional opinion, based on credible and reliable scientific analysis, GT's Kombucha sold in the U.S. contains more than 0.5% ABV.

14. My expert opinion is based on a thoughtful review and evaluation of the methods and data, including:

6 (a) Method verification, single laboratory validation and multi-lab validation of a reliable analytical method according to the most rigorous scientific standards;

9 (b) Approval of the validated analytical method by experts, and selection as AOAC Official Method of Analysis by the AOAC Expert Review Panel, plus an additional peer-reviewed publication in the Journal of AOAC International;

13 (c) Results from testing more than 50 samples of GT's Kombucha purchased from multiple retailers, multiple U.S. locations and multiple time points over a time period of more than 3 years, with the finding that every GT's Kombucha I tested contained more than 0.5% ABV.

18 15. Also during 2016-2019, I have analyzed 60 samples of GT's Kombucha for total sugars also using scientifically valid AOAC Official Methods. In total, 54 out of 60 GT's Kombucha contained sugar content more than 20% higher than the claimed amount on the label. Attached hereto as Exhibit 6 is a true and correct copy of my study that contains the test results.

23 16. In my professional opinion, based on credible and reliable scientific analysis, GT's Kombucha sold in the U.S. contains more than 120% of the claimed amount of total sugars per serving.

26 **Supporting Information:**

27 **Analysis of Alcohol in Kombucha**

1       17. Ethanol, commonly called alcohol, has been analyzed in foods and  
2 beverages for more than 100 years. In this report, when I write “alcohol” I mean  
3 ethanol, unless specified otherwise.

4       18. A number of reliable analytical methods have been used for the  
5 analysis of alcohol content in wine, beer, and spirits, including those based on the  
6 following principles: distillation, near infrared (NIR) spectrometry, gas  
7 chromatography with flame ionization detection (GC-FID), gas chromatography  
8 with mass spectrometry detection (GC-MS), and nuclear magnetic resonance  
9 imaging (NMR).

10      19. One of the most common methods used for alcohol analysis is gas  
11 chromatography with flame ionization detection (GC-FID). Regulators and industry  
12 have used GC-FID for quantifying ethanol and other alcohols in foods and  
13 beverages for more than 30 years. GC-FID was the basis of the original method used  
14 for forensic analysis of blood alcohol levels<sup>2</sup>. Most regulators and industry accept  
15 GC-FID for alcohol testing in alcoholic and non-alcoholic beverages, including the  
16 U.S. Food and Drug Administration (FDA), the U.S. Bureau of Alcohol, Tobacco  
17 and Firearms (ATF) and its successor agency, the U.S. Alcohol and Tobacco Tax  
18 and Trade Bureau (TTB). Many laboratories for the food and beverage industry rely  
19 on GC-FID to accurately measure alcohol in foodstuffs.

20      **Development of AOAC Method Performance Requirements**

21      20. During late 2015 and early 2016, I volunteered to participate in the  
22 Method Development Working Group for Analysis of Ethanol in Kombucha for  
23 AOAC International, the top global standards-setting organization for food  
24 analytical methods. As part of the Working Group, I reviewed and approved

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<sup>2</sup> Anthony, R.M., Sutheimer, C.A., & Sunshine, I. (1980) *J. Anal. Toxicol.* 4, 43–45

1 Standard Method Performance Requirements (SMPR) for methods for alcohol in  
2 kombucha, which were passed by stakeholder consensus.

3        21. Industry stakeholders such as GT's Kombucha, Kombucha Brewer's  
4 International, Kevita, Health-Ade and others provided formal support to AOAC for  
5 this development work. The SMPR were voted to be the official criteria for ethanol  
6 in kombucha methods, were reviewed and approved by the alcohol in kombucha  
7 Expert Review Panel.

8        22. I was one of seven selected members to serve on the AOAC Expert  
9 Review Panel (ERP). The purpose of the ERP was to serve as independent scientific  
10 experts to review the validity of methods submitted for selection as Official  
11 Methods of Analysis. Myself, along with six other scientific experts on the ERP,  
12 approved the SMPR. In 2016, the approved SMPR were assigned as AOAC  
13 2016.001. (More information on AOAC and the Expert Review Panel follows in a  
14 later section).

# Method Verification of a Headspace GC-FID Method for Alcohol in Kombucha

17        23. In fall of 2015, Kevita Inc., a producer of kombucha contacted me  
18 because their initial testing found that kombucha products on the market sold as  
19 non-alcoholic exceeded the legal limit of 0.5% ABV, and they wanted to  
20 independently verify their results. They had received mostly consistent results from  
21 internal and third party laboratories on ethanol in kombucha. Kevita hired me to test  
22 samples of kombucha using a study design, method and lab of my choice. Kevita  
23 made no specific requests for the study, except that I include what I determined to  
24 be the most popular kombucha products on the market, and also include samples of  
25 Kevita in my testing.

26        24. The gas chromatography with flame ionization detection (GC-FID) and  
27 headspace autosampling method I selected is a commercial analytical method

1 developed used on a daily basis by Covance Food Solutions (hereafter called  
2 Covance). GC-FID is applicable across a wide range of foods and beverages. The  
3 Covance headspace GC-FID method used is based on a long-established forensic  
4 analysis method originally developed to detect trace to low levels of alcohol in  
5 blood. I had previously used this method at Covance for quantification of low levels  
6 of residual ethanol and other solvents in samples of botanical extracts that were  
7 required to meet FDA and international regulatory limits for foods and dietary  
8 supplements.

9       25. In December 2015 and early 2016, I began to perform testing of  
10 kombucha, including GT's Kombucha, as part of a method verification on the  
11 headspace GC-FID method "ETME", used for quantification of trace to low levels  
12 of alcohol in foods and beverages, that is performed by Covance Food Solutions,  
13 Madison, Wisconsin<sup>3</sup>.

14       26. I evaluated this method's suitability for alcohol in kombucha by  
15 analyzing a set of alcohol-containing liquids, including water, pure ethanol, ethanol-  
16 water mixtures and beer at different concentrations, along with samples of  
17 commercial kombucha from seven manufacturers, including GT's Kombucha (see  
18 Exhibit 5). The headspace GC-FID method is advantageous in that it is able to  
19 reliably eliminate any interferences that may arise from the composition of the  
20 sample. For example, methanol or acetic acid may be present in complex mixtures  
21 such as fermented beverages, and may interfere with the quantification.

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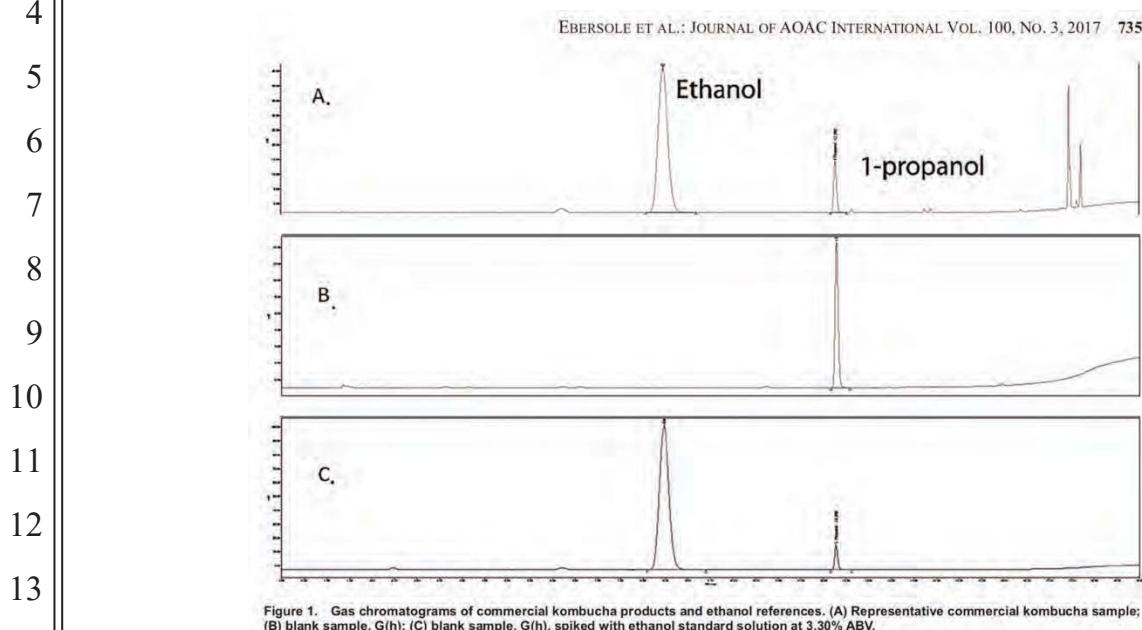
<sup>3</sup> Covance Food Solutions (CFS) was the food testing arm of Covance, a global contract research organization whose origins date to 1968. For several years, CFS was considered one of the largest and most reliable food testing labs in the U.S. CFS was purchased by Eurofins in 2018 for a reported \$670 million. CFS is now known as Eurofins Food Integrity and Innovation. Data and details that refer to Covance or CFS in this report may also be referring to Eurofins Food Integrity and Innovation, depending on the time at which research was conducted. For the purposes of this report, the same laboratory was used, in Madison, Wisconsin, regardless of its ownership.

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1        27. With the headspace GC-FID, no interference is observed in GC  
2 chromatograms using this method (see following chromatogram, also published in  
3 reference 2).



16        28. Headspace autosampling is the most reliable way to completely extract  
17 ethanol and other volatiles from food and beverage samples. Headspace sampling is  
18 often the preferred method of sampling for complex mixtures, versus direct injection  
19 methods that may introduce a greater degree of interference to the GC-FID detector.

20        29. A brief summary of the Covance headspace GC-FID method follows,  
21 with full method details also published in reference 2:

22        30. Kombucha samples are heated and agitated in a 20-mL headspace vial.  
23        A portion of the headspace is injected into a gas chromatograph (GC) with a flame  
24        ionization detector (FID) on a DB-WAXetr or equivalent GC column. The lab  
25        performs quantitation using a 6-point calibration curve generated by a weighted  
26        (1/concentration) least squares linear regression analysis.

## **2016 Method Verification Results**

1       31. Based on the method verification, I had determined that the Covance  
2 headspace GC-FID method was accurate and precise for quantification of ethanol in  
3 kombucha (see Exhibit 5), and met the Standard Method Performance Requirements  
4 (SMPR) established by the AOAC kombucha working group. In this study, no  
5 interferences from co-eluting peaks or other interferences was observed.

6       32. In the method verification study, the limit of quantitation (LOQ) for the  
7 method was 0.015% ABV, far below the legal limit of 0.5% ABV for nonalcoholic  
8 beverages in the U.S. The method was linear between 0.1% and 2.8% ABV.  
9 Intermediate precision, measured by the relative standard deviation (RSD) across  
10 different days, instruments and technicians, was < 4%, meeting the SMPR method  
11 requirements. Recovery for lab-spiked control kombucha samples ranged from 98.3  
12 to 104.2% over spiked alcohol levels of 0.13%, 1.3% and 3.3% ABV. Recovery for  
13 lab-blinded Certified Reference Materials (CRM) was 101-104% for CRM at spike  
14 levels of 0.1267%, 0.505% and 2.53% ABV. Based on these verification data, I  
15 determined that the results obtained with this method for quantifying ethanol in  
16 kombucha were reliable and credible.

17           **Kombucha Alcohol Testing in 2015**

18       33. Before and after the method verification, I tested multiple samples of  
19 commercial kombucha on multiple dates between December 2015 and July 2016.

20       34. On December 12, 2015, I purchased GT's Enlightened Kombucha and  
21 Enlightened Synergy drinks, along with samples from other kombucha brands, for  
22 testing of alcohol content. (As mentioned on page 3, GT's Enlightened Kombucha  
23 and Enlightened Synergy drinks are referred in this report as GT's Kombucha). In  
24 the U.S., GT's Kombucha is sold as a non-alcoholic beverage and is commonly sold  
25 in most suburban U.S. grocery stores, supermarkets and health food stores. There, it  
26 is commonly stored under refrigeration and is often located near the refrigerated  
27 teas, juices and waters.

## Materials Selection

35. For all testing in this report, I purchased all samples from the retailers' refrigerated shelves. I selected the bottles from the non-alcoholic beverage refrigerated section of the store, that is a separate physical location from the refrigerated alcoholic beverages. I selected flavors based on what I considered to be the more popular flavors, particularly the flavors that appeared to be taking up the most shelf space. I selected bottles that were not expired, and which had legible lot numbers. For the most abundant flavors, I often selected multiple bottles from the same lot, to duplicate results on the same discrete lot or batch, and get a sense if variation of results within the same lot number was observed. For some flavors, I selected multiple lots from the same shelf, to determine whether differences existed from lot to lot for the same flavor made at different times.

36. All commercial kombucha samples sent to Covance were purchased, stored and shipped according to the following process, including cold chain verification. Cold chain verification is important because it is possible that "live" fermented drinks containing dormant yeast and bacteria may begin to actively ferment if warmed to temperatures above 60 degrees for more than 24-48 hours.

37. Each bottle comprised one sample of GT's Kombucha. I ensured all samples were refrigerated at purchase, and I verified the refrigerator case thermometer to be between 33 and 39 degrees Fahrenheit. In 2015 and 2016, I recorded temperatures of the store refrigerated shelf with infrared thermometer readings to verify the accuracy of the refrigerator thermometer. For all studies, refrigerator thermometers were inspected to read between 33 and 39 degrees Fahrenheit at the time of purchase.

38. I bought, inspected, transported and shipped all samples in this study to the laboratory, Covance. Before purchase, I visually inspected the thermometer in the refrigerated case with GT's Kombucha. Before purchase, I also inspected the

1 GT's Kombucha for intact tamper-evident seals, intact labels, product contents and  
2 fill volume, and legible lot number and expiration date. In my possession, I took  
3 care to not shake or disturb the GFT's Kombucha, and kept all bottles upright during  
4 purchasing, transport and shipping. After purchase and inspection, I transferred and  
5 packaged the samples in a Inmark Insulated Cooler # TCLS10A in my personal  
6 vehicle to my house. I took pictures of the samples (true and correct copies of which  
7 are attached hereto as Exhibit 3) including labels and lot numbers of each flavor,  
8 and recorded all relevant label information. I wrapped the bottles carefully with  
9 bubble wrap and included plastic or paper based food-grade packaging materials in  
10 the shipment containers, to ensure bottles would not move or shift during transit. I  
11 included a temperature monitor in the cooler, (TempTale 4, Sensitech) to validate  
12 that the temperature remained within refrigerated limits during shipping.

13       39. The insulated coolers were sent the same day of purchase, marked with  
14 the following: "Fragile", "Perishable", "Refrigerate upon receipt". Shipments were  
15 transported by Priority Overnight (next day delivery by 10:30 am) by FedEx  
16 Express. The laboratory was notified of storage requirements before receiving.

17       40. All samples were reported by the laboratory to have been received on  
18 time, at a cold temperature, with ice packs. The laboratory confirmed the samples  
19 were under their control at all times, and were stored in refrigeration at 2-8 degrees  
20 Celsius, until the time of testing. During sample processing, the laboratory did not  
21 permit samples to remain outside of refrigerated conditions for more than two hours.  
22 During sample processing, kombucha materials were transferred based on weight,  
23 not volume, to account for dissolved gases. Testing was performed within 14 days  
24 of receipt. All samples were tested before the date of expiration listed on the label.

25           **Results from Initial Verification**

26  
27  
28

1       41. Results from the GT's Kombucha samples reported by Covance on  
2 December 29, 2015 were 1.35% ABV in the GT's Original and 1.45% in the GT's  
3 Gingerade (see table on page 14 for results).

4       42. Covance also tested each sample using a separate GC-MS method  
5 (Covance method "RESO") used for detection of residual solvents in  
6 pharmaceuticals. Using this GC-MS method, they found 1.43% in the GT's  
7 Original, and 1.40% ABV in the GT's Gingerade, results that were consistent with  
8 those from the headspace GC-FID method.

9                   **Multi-Lab Round-Robin Study in December 2015-March 2016**

10      43. The verification of the Covance headspace GC-FID method included a  
11 multi-lab "round-robin" study of the same GT's Kombucha samples, using five  
12 methods from four independent laboratories—Covance, ETS Laboratory in St.  
13 Helena, California, BDAS Labs in Lexington, Kentucky, and Cornerstone  
14 Laboratories in Memphis, Tennessee (see Exhibit 5, Supplementary Report).

Lab #	Instrument	Method Reference
1 (Covance)	a) GC-FID Headspace b) GC-MS Headspace	MP-ETME (Anthony et al JAT 1980, AOAC , GC-FID); RESO (GC-MS)
2 (ETS)	GC-FID Headspace	AOAC 983.13 (GC-FID)
3 (Cornerstone)	GC-MS Headspace	EPA 624 Part 136, Title 40, EPA 8260B, SW-846
4 (BDAS)	Distillation and NIR	Traditional; TTB

26      44. I purchased GT's Kombucha, along with certified reference materials  
27 (CRM) for alcohol from LGC, Cerilliant, NIST and Sigma Aldrich. CRM are  
28

1 certified by government or regulatory agencies to contain a specific amount of  
2 alcohol, and the performance and proficiency of laboratories are typically based on  
3 their accuracy in determining the correct amount in CRM. The details of these  
4 reference materials are listed in the following table:

Reference #	Identification	Lot Number	Purity	Stability	Storage
1	GT's Gingerade (Ginger flavor)	2621*C4B, Covance sample 4814442	"non-alcoholic", ethanol content not labeled, product previously tested to contain >1.0% ethanol	Tested on or before expiration date (March 25, 2016)	In a chamber set to maintain 5 ±3 deg C.
2	1-Propanol, Sigma #34871	SHBF0634V	99.98%	July 2018	Not specified
3	Control Kombucha (Kevita Inc) (ethanol-free, non-carbonated)	01206-1, Covance sample 4814443	<0.015% ethanol. Total acids 1.15%, Brix 3.0, pH 3.0 as per manufacturer.	Not specified	In a chamber set to maintain 5 ±3 deg C.
4	Ethanol (Reference standard, absolute (200 proof), Sigma-Aldrich # 459836)	SHBG7349V	99.97%	Not specified	Closed original container, room temp
5	Ethanol (Reference standard, absolute (200 proof), Sigma-Aldrich # 459836)	SHBG4976V	>99.5%	Not specified	Closed original container, room temp
6	Ethanol-water Certified Reference Material, NIST # 2894	Not applicable	0.10084% ±0.00083% certified mass fraction	valid until 30 April 2023	Refrigerate (do not freeze)
7	Ethanol-water Certified Reference Material, Cerilliant E-031	FN06181501,	100 mg/dL, (0.1267% ABV @ 20C)	exp June 2020	Refrigerate (do not freeze)

<b>8</b>	Beer Certified Reference Material, LGC BCR-651	000149, 000150, 000189, 000191	0.505 +/- 0.006 % ABV	valid until April 1, 2017	Approx 4 deg C. Room temp before opening. Do not freeze.
<b>9</b>	Ethanol-water Certified Reference Material, NIST 2897a	Not applicable	2% nominal mass fraction (2.53% +/-		Refrigerate (do not freeze)

45. The kombucha samples, including GT's Kombucha were selected from an initial survey of six retail locations in Carmel, Indiana. Multiple flavors from multiple manufacturers were selected.

# Results of 2016 Round-Robin Study

46. Results reported by Covance and ETS using their respective headspace GC-FID methods indicated a relative agreement in results on all samples tested, including those on GT's Kombucha. The distillation and NIR alcolizer methods run by BDAS laboratory also reported consistent results on all samples tested, relative to the other two labs (see reference 5).

47. In the round-robin study, six samples of kombucha tested contained greater than 1% alcohol by volume (ABV), five of which were GT's Kombucha. The amount of alcohol reported was consistent with previous laboratory and manufacturer reports. The range of ethanol content of GT's kombucha samples reported using the Covance headspace GC-FID method was 1.34% to 1.61% ABV (see following table).

1	Results from Pre-validation Study	2	3	Test Date	4	Mar 1	5	Dec 15	6	Dec 15	7	Mar 1	8	Jan 11	9	Jan 11			
10	Product	11	Lot#	12	Expiry/Best by	13	Expected Value from Spike	14	Lab #1 (GC-FID)	15	Lab #1 (GC-FID)	16	Lab #1 (GC-MS)	17	Lab #2 (GC-FID)	18	Lab #4 NIR	19	Lab #4 Distillation
GT Gingerade	1831**BBB	1/17/16	NA				1.45%, 1.46%	1.38											
GT Original	2230**D2B	1/20/16	NA				1.34%, 1.36%	1.45%											
GT Citrus	1831**B7B	1/17/16	NA													1.36%	1.27%		
GT Trilogy	0232C*A7B	1/31/16	NA													1.51%			
Commercial kombucha	5/23/16-8	5/23/16	NA																
Commercial kombucha	5370606	4/30/16	NA				1.23%, 1.21%	1.19%											
Commercial kombucha	FEB2016L112	2/1/16	NA													0.11%	0.08%		
Commercial kombucha	MAR2716E306	3/27/16	NA				0.263%, 0.253%	0.271%											
Commercial kombucha	APR2016L351	4/20/16	NA				0.236%, 0.232%	0.244%											
GT's Gingerade	2621**C4B	3/25/16	NA	1.61%									1.44%						
Spiked Commercial kombucha*	02292B	3/25/2016			1.432%								1.37%						
Spiked Commercial kombucha	02292A	3/25/2016	1.68%*	1.658%									1.61%						
Spiked Commercial kombucha	02292C	3/25/2016	1.93%*	1.922%									1.86%						
Control (ethanol-free kombucha)	02291A	NA	0%	<0.015%									<0.05%						
Control (ethanol-free kombucha)	02291C	NA	0.500%	0.692%															
Control (ethanol-free kombucha)	02291B	NA	1.500%	1.47%									1.43%						

48. I determined there was acceptable precision and percent recovery (accuracy) reported by 3 of 4 labs on reference materials, including standard reference materials, certified reference materials, and lab-spiked kombucha materials.

1        49. One lab (Cornerstone) failed to recover the certified amount of ethanol  
2 in multiple Certified Reference Materials (CRM), and also failed to meet standards  
3 for precision on duplicates of blinded kombucha samples. Cornerstone's results  
4 were therefore considered to be invalid and were not included in any further analysis  
5 or reports.

6        50. Based on these initial indicators of reliability, Covance's daily use of  
7 this method for several years, and previous validations conducted with this method  
8 principle in complex forensic and food matrices, the Covance headspace GC-FID  
9 method and laboratory was selected to undergo a full scientific validation.

10 | Headspace GC-FID Method Validation

11        51. While GC-FID is highly sensitive and specific for ethanol in foods and  
12 beverages, there is a theoretical possibility that there are unique parts within  
13 kombucha that can interfere with the instrument in ways that other foods do not.

14        52. To eliminate the possibility that kombucha may contain unique  
15 compositional interferences that are not observed with other foods or beverages,  
16 members of the kombucha industry commissioned a method development program  
17 in 2015 with AOAC International, the leading international organization for  
18 establishing analytical methods for foods.

19        53. I participated in the AOAC method development process by  
20 coordinating the single laboratory validation (SLV) of the Covance headspace GC-  
21 FID method that I had previously verified to be accurate and precise.

## **Headspace GC-FID Method -- Single Laboratory Validation (SLV) in 2016**

24        54. On May 27, 2016, AOAC issued a call for methods for ethanol in  
25 kombucha. Prior, in April 2016, following my verification of the headspace GC-FID  
26 method, I hired Covance to perform a single laboratory validation (SLV) of the  
27 method. On this study, I collaborated with Dr. Paula Brown, Ph.D. Director of the

1 Natural Health and Food Products Research Group (NRG) at British Columbia  
2 Institute of Technology (BCIT) in Burnaby, British Columbia, Canada. Dr. Brown  
3 is a member of the Natural Health Products Program Advisory Committee for  
4 Health Canada<sup>4</sup>, a current member of the AOAC Dietary Supplement Task Force  
5 related to method development, is a former Referee for the Dietary Supplement  
6 Methods Committee from 2004-2009, and has participated in seven AOAC Expert  
7 Review Panels related to method validation.

8       55. A summary of the single laboratory validation (SLV) data is as follows:  
9 An ethanol standard curve ranging from 0.05 to 5.09% ABV was used, with  
10 correlation coefficients greater than 99.9%. The method detection limit was 0.003%  
11 ABV and the LOQ was 0.01% ABV. The repeatability precision (RSD(r)) ranged  
12 from 1.62 to 2.21% and the Horwitz ratio ranged from 0.4 to 0.6. The average  
13 accuracy of the method was 98.2%. This method was validated following the  
14 guidelines for single-laboratory validation by AOAC International and met the  
15 requirements set by AOAC SMPR 2016.001, "Standard Method Performance  
16 Requirements for Determination of Ethanol in Kombucha." The headspace GC-FID  
17 method was approved by the Expert Panel as First Action Official Method of  
18 Analysis (OMA) AOAC 2016.12 on September 18, 2016 (see reference 3). The  
19 SLV was published after peer review by the Journal of AOAC in 2017 (see  
20 reference 2).

21           **Kombucha Alcohol Testing in June-July 2016**

22       56. In June 2016, I conducted testing of commercial kombucha samples for  
23 alcohol using the headspace GC-FID method previously validated at Covance. On  
24 June 28, 2016, I directed 18 bottles of GT's to be purchased from six retail locations  
25 spread geographically across the U.S., in Lititz, PA, Inverness, FL, Boulder, CO,

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27       <sup>4</sup> Health Canada is the primary governmental authority for regulation of foods and drugs in Canada, considered the counterpart to the  
U.S. FDA.  
28

1 Carmel, IN and Ventura, CA. The purpose for the multiple locations was to  
2 determine whether the transportation distance, distribution or retailer may impact  
3 the ethanol content in kombucha products. I hired four qualified, experienced  
4 professionals in the food and beverage industry whom I had worked with in a  
5 professional capacity for at least three years. My purchasing team followed all  
6 procedures for inspection and temperature control during purchasing and transport.  
7 Briefly, my team members purchased GT's Enlightened Kombucha and Synergy  
8 Kombucha from refrigerated coolers at established retailers; temperature was  
9 verified to be 32-39 degrees Fahrenheit by refrigerator thermometer; samples were  
10 immediately packaged in insulated cooler with ice packs, and shipped overnight via  
11 FedEx to Covance in Madison, Wisconsin. Covance stored all samples in  
12 refrigeration until testing. Covance tested all samples before their expiration date.

13       57. Results from the summer 2016 analysis using the validated Covance  
14 headspace GC-FID method are shown in the following table. Covance reported all  
15 samples tested to contain greater than 0.5% ABV, with the range of 1.09-1.96%.  
16 These levels are approximately 2-4 times greater than the 0.5% ABV legal limit for  
17 non-alcoholic beverages. From this data, I determined there to be no apparent  
18 differences due to the retailer or the location of purchase, based on a qualitative  
19 review of the data.

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1	Store	Store Location	Purchase Date	Manufacturer	Flavor	Enjoy by:	Lot #	Ethanol Result (% ABV)	Report Date
2	Fresh Thyme #207	Carmel, IN	12/12/15	GT's	Citrus	1/17/16	1831**B7B	1.42%	12/29/15
3	Publix 1012 W Main St	Inverness FL	6/28/16	GT's	Cosmic Cranberry	8/5/16	0626**A9B	1.60%	7/12/16
4	Sprouts 2950 Baseline Rd	Boulder, CO	6/28/16	GT's	Gingerade	8/5/16	0626**E2B	1.56%	7/12/16
5	Vons #2096	Ventura, CA	6/28/16	GT's	Gingerade	8/6/16	0726*D1B	1.35%	7/7/16
6	Fresh Thyme #207	Carmel IN	6/28/16	GT's	Gingerade	8/7/16	0826*D6B	1.49%	7/12/16
7	Fresh Thyme #207	Carmel IN	6/28/16	GT's	Gingerade	8/7/16	0826*D6B	1.43%	7/12/16
8	Giant 6004	Lititz, PA	6/28/16	GT's	Gingerade	8/7/16	0826*D9B	1.43%	7/12/16
9	Publix 1012 W Main St	Inverness FL	6/28/16	GT's	Gingerade	8/12/16	1326**F3B	1.09%	7/12/16
10	Whole Foods	Carmel, IN	12/12/15	GT's	Gingerade	1/17/16	1831**BBB	1.45%	12/29/15
11	Sprouts 2950 Baseline Rd	Boulder, CO	6/28/16	GT's	Gingerberry	8/7/16	0826*B5B	1.54%	7/12/16
12	Giant 6004	Lititz, PA	6/28/16	GT's	Gingerberry	7/25/16	2625C*B0B	1.89%	7/12/16
13	Publix 1012 W Main St	Inverness FL	6/28/16	GT's	Hibiscus Ginger	8/12/16	1326C*A8B	1.10%	7/12/16
14	Publix 1012 W Main St	Inverness FL	6/28/16	GT's	Lavender Love	8/6/16	0726**A9B	1.37%	7/12/16
15	Publix 1012 W Main St	Inverness FL	6/28/16	GT's	Multigreen	8/13/16	1426**A8B	1.41%	7/12/16
16	Sprouts 2950 Baseline Rd	Boulder, CO	6/28/16	GT's	Original	8/30/16	0266**F1B	1.60%	7/12/16
17	Whole Foods	Carmel, IN	12/12/15	GT's	Original	1/20/16	2230**D2B	1.35%	12/29/15
18	Fresh Thyme #207	Carmel IN	6/28/16	GT's	Original	7/26/16	2724**F1B	1.44%	7/12/16
19	Vons #2096	Ventura, CA	6/28/16	GT's	Original	8/28/16	3025**A3B	1.58%	7/7/16
20	Fresh Thyme #207	Carmel IN	6/28/16	GT's	Trilogy	8/1/16	0226*C4B	1.96%	7/12/16
21	Giant 6004	Lititz, PA	6/28/16	GT's	Trilogy	8/1/16	0226*D1B	1.80%	7/12/16
22	Vons #2096	Ventura, CA	6/28/16	GT's	Trilogy	8/14/16	1526**F3B	1.55%	7/7/16

58. In the above table, results from three samples tested in 2015 are also reported in the Round-Robin section of this report.

### 2018 Multi-lab Validation Study of the Alcohol Method

59. I was an investigator in a multi-lab validation study that conducted following the single laboratory validation (SLV) study, its peer-reviewed publication in the Journal of AOAC, and the review and approval by the Expert Panel as AOAC OMA 2016.12. During 2017 and 2018 I coordinated the multi-lab validation (MLV) of the method in collaboration with Dr. Brown at BCIT. This work was supported by a contract with BCIT through funding by Pepsico, who acquired Kevita in 2017.

60. In the multi-lab validation (MLV) study, four laboratories participated in the study and received practice samples, test samples, reference standards, and detailed protocols (see reference 1). Eight kombucha samples sent out to each laboratory had randomly assigned, coded sample numbers. Laboratories were blinded to the content and identity of the samples. Each laboratory analyzed all

1 samples using the GC-FID method and reported their results. Cochran's C-test and  
2 single and double Grubbs' tests were used to identify and remove outliers. Horwitz  
3 ratio values for all samples were between 0.5 and 1.7. As per the AOAC Standard  
4 Method Performance Requirements (SMPR), all samples within the analytical range  
5 of 0.1-2.0 % ABV had reproducibility (RSD(R)) values of <6%. The results from  
6 this multi-lab study demonstrated the headspace GC-FID method met the AOAC  
7 SMPR requirements across multiple laboratories, and is fit for purpose for detecting  
8 ethanol in kombucha products. Dr. Brown and I, along with Dr. Michael Chan,  
9 Ph.D. and collaborators at BCIT, submitted and published the multi-laboratory  
10 validation study of the method in peer review, which was accepted and published in  
11 the Journal of AOAC International, in September 2018 (reference 1).

12           **February 2019 Analysis of Alcohol in GT's Enlightened Kombucha and  
13           Enlightened Synergy**

14       61. In February 2019, Chris Stiner, counsel for Tortilla Factory asked me to  
15 conduct independent testing of GT's Enlightened Kombucha and Enlightened  
16 Synergy drinks (GT's Kombucha). I was instructed to conduct the testing as per the  
17 most reliable scientific procedures available. Stiner provided no other instructions  
18 and I was free to conduct the testing as I considered the most appropriate.

19       62. I purchased 29 bottles of GT's Kombucha on February 20, 2019 in  
20 Carmel, Indiana—from Whole Foods at 146<sup>th</sup> Street and Clay Terrace, from Earth  
21 Fare on South Rangeline Road, and from Market District at 116<sup>th</sup> St and Illinois St.  
22 I selected the locations based on an approximate geographic center of the U.S. I  
23 selected retailers to represent distinct health food retail chains that I presumed to  
24 employ different distribution and handling practices who are not related to each  
25 other, and who are headquartered in different U.S. locations.

26       63. I selected the bottles from the non-alcoholic beverage refrigerated  
27 section of the store, which is a separate physical location from the refrigerated  
28

alcoholic beverages. I selected flavors based on what I considered to be the more popular flavors, particularly the flavors that are most abundant on the shelves, and also to flavors that had been previously subjected to testing. I selected bottles with at least 3 weeks until expiration, and that had legible lot numbers. I also selected multiple bottles from the same lot, to duplicate same-lot results and get a sense if there could be variation of results within the same lot number. For some flavors, I selected multiple lots from the same shelf, to determine whether there might be differences from lot to lot for the same flavor made at different times. Each bottle comprised one sample. A list of samples tested is found in the following table.

Sample #	Store	Sample Name	Lot #	Enjoy By	Lab Sample #	Report Date
1	Market District	GTs Cayennade	0721C2EQ1	4/7/19	8177173	2/25/19
2	Market District	GTs Cayennade	0721C2EQ1	4/7/19	8177174	2/25/19
3	Earth Fare	GTs Cranberry	1021H2ES1	4/10/19	8177185	2/26/19
4	Earth Fare	GTs Cranberry	1021H2ES1	4/10/19	8177184	2/26/19
5	Whole Foods	GTs Cranberry	2921H1ED2	4/9/19	8177172	2/25/19
6	Earth Fare	GTs Gingerade	0421B1EL1	4/4/19	8177181	2/26/19
7	Earth Fare	GTs Gingerade	1232B1EL2	3/12/19	8177176	2/26/19
8	Earth Fare	GTs Gingerade	1232B1EL2	3/12/19	8177175	2/26/19
9	Whole Foods	GTs Gingerade	1421C1EL2	4/14/19	8177168	2/25/19
10	Whole Foods	GTs Gingerade	1421C1EL2	4/14/19	8177169	2/25/19
11	Market District	GTs Gingerberry	2921H2EM2	4/9/19	8177177	2/26/19
12	Market District	GTs Gingerberry	2921H2EM2	4/9/19	8177178	2/26/19
13	Whole Foods	GTs Guava	1021B1EK1	3/18/19	8177183	2/26/19
14	Whole Foods	GTs Guava	2921C1EH2	4/6/19	8177182	2/26/19
15	Whole Foods	GTs Guava	3121H1EG3	4/8/19	8177163	2/25/19
16	Market District	GTs Multigreens	1521B1ES1	3/23/19	8177180	2/26/19
17	Market District	GTs Multigreens	1521B1ES1	3/23/19	8177179	2/26/19
18	Whole Foods	GTs Original	1021B1EI1	4/10/19	8177170	2/25/19
19	Whole Foods	GTs Original	1021B1EI1	4/10/19	8177171	2/25/19
20	Earth Fare	GTs Original	1021B1EI2	4/10/19	8177188	2/26/19
21	Earth Fare	GTs Original	1021B1EI2	4/10/19	8177187	2/26/19
22	Earth Fare	GTs Original	1021B1EI2	4/10/19	8177186	2/26/19
23	Earth Fare	GTs Original	1021B1EI2	4/10/19	8177189	2/26/19
24	Whole Foods	GTs Trilogy	3021H2EJ1	4/10/19	8177165	2/25/19
25	Whole Foods	GTs Trilogy	3021H2EJ1	4/10/19	8177164	2/25/19
26	Whole Foods	GTs Turmeric	1421H1EL1	3/22/19	8177161	2/25/19
27	Whole Foods	GTs Watermelon	1721B1ET1	3/25/19	8177167	2/25/19
28	Whole Foods	GTs Watermelon	1721B1ET1	3/25/19	8177166	2/25/19
29	Whole Foods	GTs Mango	2921C1EF2	4/6/19	8177162	2/25/19

## 1 February 2019 Alcohol Analytical Procedures

2 64. I purchased GFT's Kombucha samples from the refrigerated shelves  
3 where they were sold, after verifying the shelves' thermometer to be between 33 and  
4 39 degrees Fahrenheit. Before purchase, and before shipping, I visually inspected  
5 the samples for intact tamper-evident seals, intact labels, product contents and fill  
6 volume, and legible lot number and expiration date. I took care not to shake bottles  
7 and kept them upright during purchasing, transport and shipping. I took pictures of  
8 the samples (true and correct copies of which are attached hereto as Exhibit 3)  
9 including labels and lot numbers of each flavor. After purchase and inspection, I  
10 transferred and packaged the samples in an insulated shipper equivalent to a  
11 PolarTech validated insulated carton shipper with 1.5" thick refrigerant packs. I  
12 wrapped the bottles with bubble wrap and included food-grade packaging materials  
13 in the shipment containers, to ensure bottles would not move during transit. The  
14 shippers were sent the same day of purchase, marked with the following: Fragile,  
15 Perishable, Refrigerate upon receipt.

16 65. Shipments were transported by Priority Overnight (next day delivery by  
17 10:30 am) by FedEx Express. The laboratory was notified of the analytical method,  
18 including storage and handling requirements before receiving the samples

19 66. All GT's Kombucha samples were reported by the laboratory to have  
20 been received cold, with ice packs. The laboratory confirmed the samples were  
21 under their control at all times. The samples were stored in refrigeration between 2-8  
22 degrees Celsius, until the time of testing. During sample processing, the laboratory  
23 did not permit samples to remain outside of refrigerated conditions for more than  
24 two hours.

25 67. All samples were tested according to the headspace GC-FID method,  
26 which is AOAC Official Method of Analysis 2016.12, by Covance-Eurofins.  
27 Testing was performed within five days of receipt. Analysis was performed between

1 February 21 and 25, 2019, with results reported on February 25 and 26, 2019. All  
2 samples were tested before the date of expiration listed on the label.

3 68. All 29 GT's Kombucha samples tested in the February 2019 study  
4 contained alcohol in excess of 0.5% ABV (see below table, laboratory test reports in  
5 Exhibit 1). The results ranged from between 0.64% ABV to 1.85% ABV, with a  
6 mean of 1.22% ABV.

Bottle #	Sample Name	Lot #	Enjoy By	Lab Sample #	Ethanol (% ABV)
1	GTs Cayennade	0721C2EQ1	4/7/19	8177173	0.70%
2	GTs Cayennade	0721C2EQ1	4/7/19	8177174	0.70%
3	GTs Cranberry	1021H2ES1	4/10/19	8177185	1.04%
4	GTs Cranberry	1021H2ES1	4/10/19	8177184	1.03%
5	GTs Cranberry	2921H1ED2	4/9/19	8177172	1.34%
6	GTs Gingerade	0421B1EL1	4/4/19	8177181	1.21%
7	GTs Gingerade	1232B1EL2	3/12/19	8177176	1.53%
8	GTs Gingerade	1232B1EL2	3/12/19	8177175	1.51%
9	GTs Gingerade	1421C1EL2	4/14/19	8177168	1.35%
10	GTs Gingerade	1421C1EL2	4/14/19	8177169	1.36%
11	GTs Gingerberry	2921H2EM2	4/9/19	8177177	1.65%
12	GTs Gingerberry	2921H2EM2	4/9/19	8177178	1.61%
13	GTs Guava	1021B1EK1	3/18/19	8177183	1.20%
14	GTs Guava	2921C1EH2	4/6/19	8177182	1.11%
15	GTs Guava	3121H1EG3	4/8/19	8177163	1.05%
16	GTs Multigreens	1521B1ES1	3/23/19	8177180	0.82%
17	GTs Multigreens	1521B1ES1	3/23/19	8177179	0.81%
18	GTs Original	1021B1EI1	4/10/19	8177170	1.38%
19	GTs Original	1021B1EI1	4/10/19	8177171	1.31%
20	GTs Original	1021B1EI2	4/10/19	8177188	1.38%
21	GTs Original	1021B1EI2	4/10/19	8177187	1.32%
22	GTs Original	1021B1EI2	4/10/19	8177186	1.44%
23	GTs Original	1021B1EI2	4/10/19	8177189	1.36%
24	GTs Trilogy	3021H2EJ1	4/10/19	8177165	1.85%
25	GTs Trilogy	3021H2EJ1	4/10/19	8177164	1.76%
26	GTs Turmeric	1421H1EL1	3/22/19	8177161	1.37%
27	GTs Watermelon	1721B1ET1	3/25/19	8177167	0.64%
28	GTs Watermelon	1721B1ET1	3/25/19	8177166	0.64%
29	GTs Mango	2921C1EF2	4/6/19	8177162	0.96%

26 69. The range of alcohol in the data represents between 28% and 370%  
27 higher than the legal limit of 0.5% ABV. These results were generally consistent  
28

1 with the results from the testing I conducted in 2016, described previously in this  
2 report.

3       70. The alcohol levels reported in GT's Kombucha are consistent with  
4 those in reports provided to me by Chris Stiner, who conducted testing of 60 bottles  
5 GT's Kombucha, using the laboratory Enartis Vinquiry (Vinquiry) in Windsor,  
6 California from December 2017. Vinquiry uses a GC-FID method to quantify  
7 alcohol in various alcoholic beverages, such as wine. I reviewed these Vinquiry  
8 reports, and removed 14 samples from the analysis, due to a lack of recorded  
9 information on the sample expiration date or a complete record of cold chain  
10 assurance. Vinquiry found all 46 bottles within the remaining set to contain more  
11 than 0.5% ethanol, within the range of 0.60- 2.05% ABV (see Exhibit 7). The  
12 alcohol in these samples is between 20% and 310% higher than the legal limit of  
13 0.5% ABV.

14       71. The results obtained for alcohol in GT's Enlightened Kombucha and  
15 Enlightened Synergy is generally consistent with the concentrations reported in the  
16 published literature. A number of independently conducted reports have also found  
17 commercial kombucha to contain in excess of 0.5% ABV (see references 5-7).

18       72. For example, in 2015 John Edwards, Ph.D. from Process NMR  
19 Associates analyzed three samples of GT's Kombucha using nuclear magnetic  
20 resonance method, which is highly specific and sensitive for alcohol. He found All  
21 GT's Kombucha exceeded 0.5% ABV, with a range of 1.23-1.40 % ABV, reflecting  
22 alcohol levels 246%-280% higher than the 0.5% limit. In 2017, Daniel Armstrong,  
23 Ph.D. and colleagues at the University of Texas analyzed eight samples of GT's  
24 Kombucha using headspace GC-FID, and found they all exceeded 0.5% alcohol,  
25 reporting a range of 1.1%-1.8% ABV in GT's Kombucha drinks. This reflects an  
26 amount that is 220%-360% higher than the 0.5% ABV limit for non-alcoholic  
27 beverages.

28

1                   **Alcohol in GT's Compared to Alcoholic Beverages**

2                 73. Although a serving size of 8 oz is labeled on GT's Kombucha  
3 containers, many consumers may drink an entire bottle as a serving, since the  
4 container provides no way to measure a serving. Drinking an entire container of  
5 GT's kombucha containing 1.85% ABV (such as GT's Trilogy, lab sample #  
6 8177165) would provide 8.8 mL (milliliters) of alcohol. This is the same quantity of  
7 alcohol that would be consumed in 6 oz of 5% ABV beer—equivalent to one half of  
8 a 12 oz. bottle of Budweiser. If we were to take a more conservative estimate, the  
9 average (mean) GT's with 1.22% alcohol (containing approximately 5.8 mL of  
10 alcohol per bottle) provides the same alcohol as about 4 ounces of Budweiser, or  
11 about 1/3 of a bottle.

12                 74. As a result of the method verification, single laboratory validation and  
13 multi-lab validation of this headspace GC-FID method, in addition to thoughtful  
14 review and evaluation of the ethanol method by AOAC Expert Review Panel and  
15 the Journal of AOAC International, along with my testing a number of GT's  
16 Enlightened Kombucha and Enlightened Synergy samples from multiple retailers  
17 and locations, and the consistency of these results using the same scientifically valid  
18 method over more than three years, I consider the alcohol results reported in my  
19 studies here to be highly credible and reliable.

20                   **Sugars Analysis in Kombucha**

21                   **Spring 2016 Sugars Analysis**

22                 75. In spring and summer of 2016, I had conducted an analysis of total  
23 sugars in 31 GT's Enlightened Kombucha and Enlightened Synergy products. I  
24 performed the sugars analysis on some of the same samples tested for alcohol, so the  
25 purchasing, storage, transportation and sampling procedures detailed above for  
26 alcohol were the same for the sugars analysis. The analysis used three different  
27 laboratories running different AOAC Official Methods of Analysis based on high

1 performance liquid chromatography (HPLC). The 2016 study found that all three  
 2 labs together, using different AOAC Official Methods, found all 31 GT's samples  
 3 analyzed to exceed levels above 20% more than the labeled quantity of sugars and  
 4 carbohydrates.

5       76. Test results on 31 samples of GT's kombucha in October 2016 using  
 6 AOAC Official Method 982.14 resulted in 6.7-11 grams of total sugars per serving,  
 7 versus 2-6 grams listed on the label. On average, GT's products contained more than  
 8 three times the labeled amount of sugars (see following table and a true and correct  
 9 copy of my study, Exhibit 6).

Store	Store Location	Purchase Date	Manufacturer	Flavor	Enjoy by:	Lot #	Sugars Claim (g/serv)	Sugars Result (g/serv)	Report Date
Publix 1012 W Main St	Inverness FL	6/28/16	GT's	Cosmic Cranberry	8/5/16	0626**A9B	2	10.0	7/12/16
Vons #2096	Ventura, CA	5/12/16	GT's	Gingerade	6/17/16	1824 *C9B	2	7.5	6/7/16
Fresh Thyme	Indianapolis IN	5/3/16	GT's	Gingerade	6/11/16	1224*D6B	2	7.9	5/27/16
Fresh Thyme	Indianapolis IN	5/3/16	GT's	Gingerade	6/11/16	1224*D6B	2	8.1	5/27/16
Publix 1012 W Main St	Inverness FL	6/28/16	GT's	Gingerade	8/12/16	1326**F3B	2	8.2	7/12/16
Giant 6004	Lititz, PA	6/28/16	GT's	Gingerade	8/7/16	0826*D9B	2	8.2	7/12/16
Fresh Thyme #207	Carmel IN	6/28/16	GT's	Gingerade	8/7/16	0826*D6B	2	8.3	7/12/16
Fresh Thyme #207	Carmel IN	6/28/16	GT's	Gingerade	8/7/16	0826*D6B	2	8.7	7/12/16
Sprouts 2950 Baseline Rd	Boulder, CO	6/28/16	GT's	Gingerade	8/5/16	0626**E2B	2	8.9	7/12/16
Vons #2096	Ventura, CA	6/28/16	GT's	Gingerade	8/6/16	0726*D1B	2	8.9	7/7/16
WholeFoods	Carmel IN	4/4/16	GT's	Gingerade	5/14/16	1529*B9B	2	9.0	4/21/16
Whole Foods	Carmel IN	4/4/16	GT's	Gingerade	5/14/16	1529*B9B	2	9.1	4/11/16
Fresh Thyme	Indianapolis IN	5/3/16	GT's	Gingerberry	6/3/16	0424C*C4B	4	7.7	5/27/16
Fresh Market	Carmel IN	5/3/16	GT's	Gingerberry	6/3/16	0424C*C4B	4	7.9	5/27/16
Giant 6004	Lititz, PA	6/28/16	GT's	Gingerberry	7/25/16	2625C*B0B	4	8.7	7/12/16
Sprouts 2950 Baseline Rd	Boulder, CO	6/28/16	GT's	Gingerberry	8/7/16	0826*B5B	4	11.0	7/12/16
Publix 1012 W Main St	Inverness FL	6/28/16	GT's	Hibiscus Ginger	8/12/16	1326C*A8B	2	9.4	7/12/16
Publix 1012 W Main St	Inverness FL	6/28/16	GT's	Lavender Love	8/6/16	0726**A9B	2	8.9	7/12/16
Vons #2096	Ventura, CA	5/12/16	GT's	Multigreen	6/12/16	1324 *A7B	2	10.2	6/7/16
Fresh Market	Carmel IN	5/3/16	GT's	Multigreen	6/13/16	1424C*A2B	2	6.9	5/27/16
Fresh Thyme	Indianapolis IN	5/3/16	GT's	Multigreen	6/13/16	1424C*A2B	2	7.0	5/27/16
Publix 1012 W Main St	Inverness FL	6/28/16	GT's	Multigreen	8/13/16	1426**A8B	2	9.4	7/12/16
Vons #2096	Ventura, CA	5/12/16	GT's	Original	7/20/16	2124**E5B	2	8.8	6/7/16
Sprouts 2950 Baseline Rd	Boulder, CO	6/28/16	GT's	Original	8/30/16	0266**F1B	2	8.9	7/12/16
Vons #2096	Ventura, CA	6/28/16	GT's	Original	8/28/16	3025**A3B	2	8.9	7/7/16
Fresh Thyme #207	Carmel IN	6/28/16	GT's	Original	7/26/16	2724*F1B	2	9.0	7/12/16
Fresh Market	Carmel IN	5/3/16	GT's	Trilogy	6/19/16	2024**C8B	2	6.7	5/27/16
Vons #2096	Ventura, CA	5/12/16	GT's	Trilogy	6/19/16	2124**C2B	2	8.6	6/7/16
Fresh Thyme #207	Carmel IN	6/28/16	GT's	Trilogy	8/1/16	0226*C4B	2	9.1	7/12/16
Giant 6004	Lititz, PA	6/28/16	GT's	Trilogy	8/1/16	0226*D1B	2	10.0	7/12/16
Vons #2096	Ventura, CA	6/28/16	GT's	Trilogy	8/14/16	1526**F3B	2	11.0	7/7/16

## 1 February 2019 Sugars Analysis

2  
3 77. I purchased 29 bottles of GT's Kombucha on February 20, 2019 in  
4 Carmel, Indiana—from Whole Foods at 146<sup>th</sup> Street and Clay Terrace, from Earth  
5 Fare on South Rangeline Road, and from Market District at 116<sup>th</sup> St. and Illinois St.

6  
7 78. Because the samples tested in the February 2019 study were the same  
8 as the ones analyzed for alcohol, I employed all the same procedures and  
9 precautions related to sample purchasing, storage, transportation and testing  
10 described previously in this report. Covance analyzed the samples between February  
11 21 and 25, 2019, with results reported on February 25 and 26, 2019.

12  
13 79. Covance analyzed the kombucha samples for total sugars by HPLC,  
14 according to method AOAC Official Method 982.14. This method is widely  
15 applicable for total sugars in foods and beverages, and is one of the high  
16 performance liquid chromatography (HPLC) based methods for sugars that is  
17 considered reliable because it is specific for the type of sugar, and is sensitive at low  
18 concentrations typically found in beverages. As a result, this method is recognized  
19 by FDA and other regulatory authorities for testing of total sugars in a range of  
20 foods and beverages.

## 21 Sugars Results from February 2019 Analysis

22  
23 80. Test results on the 29 samples of GT's Kombucha in February 2019  
24 using the Covance method resulted in an average of 9.2 grams of total sugars per 8  
25 oz. serving, versus an average of 7 grams of sugars listed on the label (see following  
26 table). On average, the sugar in GT's exceeded the label claim by 33%. The range of  
27 sugars detected was 7.6-11.1 g/serving, compared to 6-10 g/serving listed on the  
28 label.

Bottle #	Sample Name	Lot #	Enjoy By	Lab Sample #	Total Sugars (g/serving)	Sugars Labeled (g/serving)	Total Sugars (% Above Label)
1	GTs Cayennade	0721C2EQ1	4/7/19	8177173	9.3	8	16%
2	GTs Cayennade	0721C2EQ1	4/7/19	8177174	9.4	8	17%
3	GTs Cranberry	1021H2ES1	4/10/19	8177185	10.1	8	26%
4	GTs Cranberry	1021H2ES1	4/10/19	8177184	9.9	8	23%
5	GTs Cranberry	2921H1ED2	4/9/19	8177172	8.6	8	7%
6	GTs Gingerade	0421B1EL1	4/4/19	8177181	8.6	6	43%
7	GTs Gingerade	1232B1EL2	3/12/19	8177176	7.9	6	32%
8	GTs Gingerade	1232B1EL2	3/12/19	8177175	7.9	6	31%
9	GTs Gingerade	1421C1EL2	4/14/19	8177168	7.6	6	26%
10	GTs Gingerade	1421C1EL2	4/14/19	8177169	7.7	6	28%
11	GTs Gingerberry	2921H2EM2	4/9/19	8177177	9.6	6	59%
12	GTs Gingerberry	2921H2EM2	4/9/19	8177178	9.7	6	61%
13	GTs Guava	1021B1EK1	3/18/19	8177183	10.0	8	24%
14	GTs Guava	2921C1EH2	4/6/19	8177182	10.0	8	24%
15	GTs Guava	3121H1EG3	4/8/19	8177163	10.1	8	26%
16	GTs Multigreens	1521B1ES1	3/23/19	8177180	9.6	8	19%
17	GTs Multigreens	1521B1ES1	3/23/19	8177179	9.5	8	19%
18	GTs Original	1021B1EI1	4/10/19	8177170	9.1	6	52%
19	GTs Original	1021B1EI1	4/10/19	8177171	9.4	6	56%
20	GTs Original	1021B1EI2	4/10/19	8177188	9.1	6	51%
21	GTs Original	1021B1EI2	4/10/19	8177187	9.6	6	59%
22	GTs Original	1021B1EI2	4/10/19	8177186	8.8	6	47%
23	GTs Original	1021B1EI2	4/10/19	8177189	8.9	6	48%
24	GTs Trilogy	3021H2EJ1	4/10/19	8177165	8.4	6	40%
25	GTs Trilogy	3021H2EJ1	4/10/19	8177164	8.6	6	43%
26	GTs Turmeric	1421H1EL1	3/22/19	8177161	8.5	6	42%
27	GTs Watermelon	1721B1ET1	3/25/19	8177167	11.1	9	23%
28	GTs Watermelon	1721B1ET1	3/25/19	8177166	10.9	9	21%
29	GTs Mango	2921C1EF2	4/6/19	8177162	10.5	10	4%

81. The amount of total sugars per serving reported in the February 2019 round of testing were similar to the amounts from previous testing in 2016. Considering the suitability of the analytical method, and the relative consistency in results over time, I believe these results to be reliable and accurate.

### Kombucha Sugars in Context of Sugared Beverages

82. Some useful context: under the old FDA nutrition labeling requirements, and also based on the mean sugar content found in the February 2019 study, an 8 oz. serving size of GT's provides the same amount of sugar in 2.8 oz. of Coca Cola, or approximately 1/4 can. However, on May 20, 2016, FDA announced nutrition labeling guidelines requiring foods that contain 1 to 2 servings must be labeled to contain one serving, on or before January 1, 2020 for firms with \$10

1 million of more in annual sales<sup>5</sup>. Under the new FDA labeling rules that will apply  
2 to these manufacturers on January 1, 2020, a consumer who drinks an entire bottle  
3 (one serving) of GT's Watermelon Kombucha, lab sample 8177166 is consuming 22  
4 grams of added sugar per serving. The amount of added sugar in the GT's  
5 Watermelon provides 88 calories, and represents 44% of the 50 gram recommended  
6 maximum daily value for added sugars, based on a 2,000 calorie diet. This amount  
7 of added sugar is equivalent to 6.8 oz. of Coca Cola, more than half of a standard 12  
8 oz. can.

9       83. When combining the sugars and alcohol content under the serving size  
10 requirements, the calorie count per serving is calculated much higher than is  
11 currently reported on the label. For example, a bottle of GT's Cranberry, lab sample  
12 8177172 contains 17 grams of sugar and 5 grams of alcohol, which provides more  
13 than 100 calories per bottle. This exceeds the 30 calories per serving currently listed  
14 on the label.

15       84. As a result of my thoughtful review and evaluation of sugars analysis,  
16 selection of AOAC Official Methods in recognized laboratories for testing, and the  
17 testing of 60 GT's Kombucha samples from multiple retailers and locations, and the  
18 consistency of the sugars results in GT's Kombucha using these methods over a  
19 period of more than three years, I consider the alcohol results reported in my studies  
20 here to be highly credible and reliable.

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27       <sup>5</sup> FDA, "Changes to the Nutrition Facts Label". Source: <https://www.fda.gov/Food/GuidanceRegulation/ucm385663.htm> accessed  
March 1, 2019

28

1 I declare under penalty of perjury under the laws of the United States of America  
2 and the state of Texas, that the foregoing is true and correct and that this Declaration was  
3 executed on May 20, 2019 at Carmel, Indiana.

4

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8 Blake Ebersole  
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# EXHIBIT 1

# **EXHIBIT 1 - PART A**

## Certificate of Analysis

### NaturPro Scientific

10541 Brookview Dr  
Carmel Indiana 46032 United States

Sample Name:	GTs Original	Eurofins Sample:	8177171
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1021B1EI1 Sample 2	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	4.7 g/Serving Size
Glucose	5.7 g/Serving Size
Fructose	8.3 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	19 g/Serving Size
<b>Density *</b>	
Density	1.015 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.31 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Madison WI 53704  
800-675-8375



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Sample Name:	GTs Guava	Eurofins Sample:	8177182
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	2921C1EH2	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	6.4 g/Serving Size
Glucose	5.9 g/Serving Size
Fructose	7.6 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	20 g/Serving Size
<b>Density *</b>	
Density	1.016 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.11 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Guava	Eurofins Sample:	8177183
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1021B1EK1	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	7.3 g/Serving Size
Glucose	5.4 g/Serving Size
Fructose	7.2 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	20 g/Serving Size
<b>Density *</b>	
Density	1.017 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.20 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Cranberry	Eurofins Sample:	8177184
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1021H2ES1 Sample 1	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	3 g/Serving Size
Glucose	8.4 g/Serving Size
Fructose	8.3 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	20 g/Serving Size
<b>Density *</b>	
Density	1.017 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.03 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Cranberry	Eurofins Sample:	8177185
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1021H2ES1 Sample 2	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	4 g/Serving Size
Glucose	8.2 g/Serving Size
Fructose	8.0 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	20 g/Serving Size
<b>Density *</b>	
Density	1.017 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.04 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
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Sample Name:	GTs Original	Eurofins Sample:	8177186
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1021B1E12	Online Order	20
Sample 1			

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	4.6 g/Serving Size
Glucose	5.1 g/Serving Size
Fructose	7.9 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	18 g/Serving Size
<b>Density *</b>	
Density	1.014 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.44 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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<b>Sample Name:</b>	<b>GTs Original</b>	<b>Eurofins Sample:</b>	<b>8177187</b>
<b>Project ID</b>	NATUREP_SC-20190221-0002	<b>Receipt Date</b>	21-Feb-2019
<b>PO Number</b>	Charge – Visa	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	16 fl oz	<b>Login Date</b>	21-Feb-2019
<b>Description</b>	1021B1E12 Sample 2	<b>Online Order</b>	20

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	5 g/Serving Size
Glucose	5.7 g/Serving Size
Fructose	8.4 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	19 g/Serving Size
<b>Density *</b>	
Density	1.014 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.32 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	<b>Food Integrity Innovation-Madison</b>
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	<b>Food Integrity Innovation-Madison</b>
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	<b>Food Integrity Innovation-Madison</b>
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC	
INTERNATIONAL Gaithersburg, MD USA (2005). Official Method 982.14. (Modified)	

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## Certificate of Analysis

### NaturPro Scientific

10541 Brookview Dr  
Carmel Indiana 46032 United States

Sample Name:	GTs Original	Eurofins Sample:	8177188
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1021B1E12	Online Order	20
Sample 3			

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	0.9 g/Serving Size
Glucose	7.6 g/Serving Size
Fructose	9.6 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	18 g/Serving Size
<b>Density *</b>	
Density	1.014 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.38 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Gingerade	Eurofins Sample:	8177181
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	0421B1EL1	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	3 g/Serving Size
Glucose	5.7 g/Serving Size
Fructose	8.4 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	17 g/Serving Size
<b>Density *</b>	
Density	1.014 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.21 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Original	Eurofins Sample:	8177189
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1021B1E12 Sample 4	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	0.8 g/Serving Size
Glucose	7.5 g/Serving Size
Fructose	9.4 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	18 g/Serving Size
<b>Density *</b>	
Density	1.013 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.36 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Gingerberry	Eurofins Sample:	8177178
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	2921H2EM2 Sample 2	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	7.3 g/Serving Size
Fructose	10 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	20 g/Serving Size
<b>Density *</b>	
Density	1.016 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.61 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Multigreens	Eurofins Sample:	8177179
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1521B1ES1 Sample 1	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	5.8 g/Serving Size
Glucose	5.7 g/Serving Size
Fructose	7.5 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	19 g/Serving Size
<b>Density *</b>	
Density	1.016 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	0.809 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Multigreens	Eurofins Sample:	8177180
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1521B1ES1 Sample 2	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	5.6 g/Serving Size
Glucose	5.8 g/Serving Size
Fructose	7.7 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	19 g/Serving Size
<b>Density *</b>	
Density	1.016 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	0.820 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Gingerade	Eurofins Sample:	8177181
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	0421B1EL1	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	3 g/Serving Size
Glucose	5.7 g/Serving Size
Fructose	8.4 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	17 g/Serving Size
<b>Density *</b>	
Density	1.014 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.21 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Gingerade	Eurofins Sample:	8177175
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1232B1EL2 Sample 1	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	<0.5 g/Serving Size
Glucose	6.8 g/Serving Size
Fructose	8.9 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	16 g/Serving Size
<b>Density *</b>	
Density	1.011 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.51 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Gingerberry	Eurofins Sample:	8177177
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	2921H2EM2 Sample 1	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	7.1 g/Serving Size
Fructose	10 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	20 g/Serving Size
<b>Density *</b>	
Density	1.016 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.65 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
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Report Status: Final

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Sample Name:	GTs Gingerade	Eurofins Sample:	8177176
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1232B1EL2 Sample 2	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	<0.5 g/Serving Size
Glucose	6.9 g/Serving Size
Fructose	8.9 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	16 g/Serving Size
<b>Density *</b>	
Density	1.012 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.53 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
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Sample Name:	GTs Original	Eurofins Sample:	8177186
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1021B1E12	Online Order	20
Sample 1			

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	4.6 g/Serving Size
Glucose	5.1 g/Serving Size
Fructose	7.9 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	18 g/Serving Size
<b>Density *</b>	
Density	1.014 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.44 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
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Sample Name:	GTs Original	Eurofins Sample:	8177187
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1021B1E12 Sample 2	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	5 g/Serving Size
Glucose	5.7 g/Serving Size
Fructose	8.4 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	19 g/Serving Size
<b>Density *</b>	
Density	1.014 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.32 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Cranberry	Eurofins Sample:	8177184
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1021H2ES1 Sample 1	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	3 g/Serving Size
Glucose	8.4 g/Serving Size
Fructose	8.3 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	20 g/Serving Size
<b>Density *</b>	
Density	1.017 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.03 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Cranberry	Eurofins Sample:	8177185
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1021H2ES1 Sample 2	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	4 g/Serving Size
Glucose	8.2 g/Serving Size
Fructose	8.0 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	20 g/Serving Size
<b>Density *</b>	
Density	1.017 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.04 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Tumeric	Eurofins Sample:	8177161
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1421H1EL1 3.22.19	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	1 g/Serving Size
Glucose	6.7 g/Serving Size
Fructose	9.5 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	17 g/Serving Size
<b>Density *</b>	
Density	1.014 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.37 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Guava	Eurofins Sample:	8177163
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	3121H1EG3	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	5.1 g/Serving Size
Glucose	6.9 g/Serving Size
Fructose	8.1 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	20 g/Serving Size
<b>Density *</b>	
Density	1.018 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.05 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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<b>Sample Name:</b>	<b>GTs Trilogy</b>	<b>Eurofins Sample:</b>	<b>8177164</b>
<b>Project ID</b>	NATUREP_SC-20190221-0002	<b>Receipt Date</b>	21-Feb-2019
<b>PO Number</b>	Charge – Visa	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	16 fl oz	<b>Login Date</b>	21-Feb-2019
<b>Description</b>	3021H2EJ1 Sample 1	<b>Online Order</b>	20

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	3 g/Serving Size
Glucose	5.4 g/Serving Size
Fructose	8.8 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	17 g/Serving Size
<b>Density *</b>	
Density	1.016 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.76 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	<b>Food Integrity Innovation-Madison</b>
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	<b>Food Integrity Innovation-Madison</b>
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	<b>Food Integrity Innovation-Madison</b>
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC	
INTERNATIONAL, Gaithersburg, MD, USA. (2005). Official Method 982.14. (Modified)	

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Sample Name:	GTs Trilogy	Eurofins Sample:	8177165
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	3021H2EJ1 Sample 2	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	3 g/Serving Size
Glucose	5.2 g/Serving Size
Fructose	8.6 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	17 g/Serving Size
<b>Density *</b>	
Density	1.015 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.85 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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Sample Name:	GTs Watermelon	Eurofins Sample:	8177166
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1721B1ET1 Sample 1	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	5.0 g/Serving Size
Glucose	6.9 g/Serving Size
Fructose	9.9 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	22 g/Serving Size
<b>Density *</b>	
Density	1.019 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	0.641 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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<b>Sample Name:</b>	<b>GTs Watermelon</b>	<b>Eurofins Sample:</b>	<b>8177167</b>
<b>Project ID</b>	NATUREP_SC-20190221-0002	<b>Receipt Date</b>	21-Feb-2019
<b>PO Number</b>	Charge – Visa	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	16 fl oz	<b>Login Date</b>	21-Feb-2019
<b>Description</b>	1721B1ET1 Sample 2	<b>Online Order</b>	20

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	5.1 g/Serving Size
Glucose	7.0 g/Serving Size
Fructose	10 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	22 g/Serving Size
<b>Density *</b>	
Density	1.019 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	0.640 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	<b>Food Integrity Innovation-Madison</b>
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	<b>Food Integrity Innovation-Madison</b>
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	<b>Food Integrity Innovation-Madison</b>
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA (2005), Official Method 982.14, (Modified)	

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Sample Name:	GTs Gingerade	Eurofins Sample:	8177168
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	1421C1EL2 Sample 1	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	5.5 g/Serving Size
Fructose	7.6 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	15 g/Serving Size
<b>Density *</b>	
Density	1.012 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.35 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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<b>Sample Name:</b>	<b>GTs Gingerade</b>	<b>Eurofins Sample:</b>	<b>8177169</b>
<b>Project ID</b>	NATUREP_SC-20190221-0002	<b>Receipt Date</b>	21-Feb-2019
<b>PO Number</b>	Charge – Visa	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	16 fl oz	<b>Login Date</b>	21-Feb-2019
<b>Description</b>	1421C1EL2 Sample 2	<b>Online Order</b>	20

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	5.6 g/Serving Size
Fructose	7.7 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	15 g/Serving Size
<b>Density *</b>	
Density	1.012 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.36 %

Method References Testing Location

Food Integrity Innovation-Madison

## AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).

Mettler Toledo Densito 30PX operating instructions

Residual Ethanol in Kombucha (ETME\_KB\_S) Food Integrity Innovation-Madison

AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).

Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography, Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).

Sugar Profile by HPLC (SGLC\_S) Food Integrity Innovation-Madison

Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)

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Carmel Indiana 46032 United States

Testing Location(s)	Released on Behalf of Eurofins by
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Food Integrity Innovation-Madison	Edward Ladwig - Director
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Eurofins Food Chemistry Testing US, Inc.  
3301 Kinsman Blvd  
Madison WI 53704  
800-675-8375



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# Certificate of Analysis

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<b>Sample Name:</b>	<b>GTs Original</b>	<b>Eurofins Sample:</b>	<b>8177170</b>
<b>Project ID</b>	NATUREP_SC-20190221-0002	<b>Receipt Date</b>	21-Feb-2019
<b>PO Number</b>	Charge – Visa	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	16 fl oz	<b>Login Date</b>	21-Feb-2019
<b>Description</b>	1021B1EI1 Sample 1	<b>Online Order</b>	20

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	4 g/Serving Size
Glucose	5.7 g/Serving Size
Fructose	8.5 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	18 g/Serving Size
<b>Density *</b>	
Density	1.015 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.38 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	<b>Food Integrity Innovation-Madison</b>
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	<b>Food Integrity Innovation-Madison</b>
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	<b>Food Integrity Innovation-Madison</b>
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC	
INTERNATIONAL, Gaithersburg, MD, USA (2005), Official Method 982.14, (Modified)	

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Food Integrity Innovation-Madison	Edward Ladwig - Director
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Sample Name:	GTs Cranberry	Eurofins Sample:	8177172
Project ID	NATUREP_SC-20190221-0002	Receipt Date	21-Feb-2019
PO Number	Charge – Visa	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	16 fl oz	Login Date	21-Feb-2019
Description	2921H1ED2	Online Order	20

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	8.0 g/Serving Size
Fructose	7.1 g/Serving Size
Maltose	<0.5 g/Serving Size
Lactose	<0.5 g/Serving Size
Total Sugar	17 g/Serving Size
<b>Density *</b>	
Density	1.015 g/mL
<b>Residual Ethanol in Kombucha *</b>	
Ethanol v/v	1.34 %

Method References	Testing Location
<b>Density (DENSITY_S)</b>	Food Integrity Innovation-Madison
AOAC Official Method 988.06 Specific Gravity of Beer and Wort Digital Density Meter method (modified).	
Mettler Toledo Densito 30PX operating instructions	
<b>Residual Ethanol in Kombucha (ETME_KB_S)</b>	Food Integrity Innovation-Madison
AOAC Method 2016.12, Official Methods of Analysis of AOAC INTERNATIONAL (2016).	
Anthony, Robert M.; Sutheimer, Craig A.; Sunshine, Irving, <u>Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography</u> , Journal of Analytical Toxicology, Volume 4, Number 1, January 1980, pp. 43-45 (modified).	
<b>Sugar Profile by HPLC (SGLC_S)</b>	Food Integrity Innovation-Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

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# **EXHIBIT 1 - PART B**

## Certificate of Analysis

### Amin Talati & Upadhye, LLC

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<b>Sample Name:</b>	<b>GT Gingerade</b>	<b>Covance Sample:</b>	<b>5160244</b>
<b>Project ID</b>	AMIN_TA_UP-20160701-0001	<b>Receipt Date</b>	01-Jul-2016
<b>PO Number</b>	CVD	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	8 fl oz	<b>Login Date</b>	01-Jul-2016
<b>Description</b>	0726*D1B 8/6/16 (Stated 2g / 30 Cal) 10.8°C	<b>Storage Condition</b>	5 (+/- 3) degrees Celsius

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	2.7 g/Serving Size
Fructose	4.2 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	8.9 g/Serving Size
<b>Specific Gravity</b>	
Density	1.020 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.35 %

<b>Method References</b>	<b>Testing Location</b>
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

<b>Testing Location(s)</b>	<b>Released on Behalf of Covance by</b>
Covance Laboratories - Madison	Lori Ross - Associate Director
Covance Laboratories Inc. 3301 Kinsman Blvd Madison WI 53704 800-675-8375	
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#4074

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Carmel Indiana 46032 United States

Sample Name:	GT Trilogy	Codance Sample:	516-245
vroject jD	AMIN_TA_UP-20160701-0001	Receipt Date	01-uW-2016
vI Number	CVD	Receipt Conzition	Cold on c et l+e or l+e Pa+k
Sample Serding SiQe	8 fl oz	Login Date	01-uW-2016
Description	1526**/ 3B 8(14(16 gStated 2) ( 30 Cal. 10°JC	Storage Conzition	5 gG- 3. de) rees CelsiW

Analysis	Result
Sugar vrofile by HvLC	
SWrose	2°4 ) (Servin) Size
F IWose	3°7 ) (Servin) Size
/ rWtose	5°4 ) (Servin) Size
Maltose	<0°2 ) (Servin) Size
La+tose	<0°2 ) (Servin) Size
Total SWjar	11 ) (Servin) Size
Specific Gradity	
Density	1°022 ) (mL
Resizual Ethanol anz Methanol *	
%ethanol v/v	1°55 9

Methoz References	Testing Location
Resizual Ethanol anz Methanol (ETME_S:9)	Codance Laboratories 0Mazison
%ethanol(Methanol Ey b eadspa+e with F C-/ ID°	
Specific Gradity (SvGv_S:15)	Codance Laboratories 0Mazison
NIST b andEook 133 - Che+kin) the Net Contents of Pa+ka) ed F oods, 2015 %dition gModified.	
Sugar vrofile by HvLC (SGLC_S:13)	Codance Laboratories 0Mazison
Hff+ial Methods of Analysis of AHAC INT%ONATIHNAL 18th %d°, AHAC INT%ONATIHNAL, FaithersEW) , MD, USA, g2005., Hff+ial Method R82°14° gModified.	

Testing Location(s)	Releasez on Behalf of Codance by
Codance Laboratories 0Mazison	Lori Ross 0Associate Director

Covance Laboratories In+°  
3301 Kinsman Blvd  
Madison c I 53704  
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## Certificate of Analysis

### Amin Talati & Upadhye, LLC

10541 Brookview Dr  
Carmel Indiana 46032 United States

Sample Name:	GT Original	Covance Sample:	5160246
Project ID	AMIN_TA_UP-20160701-0001	Receipt Date	01-° JI-2016
PO Number	CVD	Receipt Condition	Cold on u et IV or IV PaWs
Sample Serving Size	8 fl oz	Login Date	01-° JI-2016
Description	3025**A3B 8/28/16 Stated 2( / 30 Calg 10)8.C	Storage Condition	5 c+- 3gde( rees Celsius

Analysis	Result
Sugar Profile by HPLC	
SJWose	1 ( /Servin( Size
GIJWose	3)1 ( /Servin( Size
FrJWose	4)7 ( /Servin( Size
Maltose	<0)2 ( /Servin( Size
LaWose	<0)2 ( /Servin( Size
Total SJ( ar	8)9 ( /Servin( Size
Specific Gravity	
Density	1)019 ( /mL
Residual Ethanol and Methanol *	
Ethanol v/v	1)58 %

Method References	Testing Location
Residual Ethanol and Methanol (ETME_S:9)	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID)	
Specific Gravity (SPGP_S:15)	Covance Laboratories - Madison
NIST Handbook 133 - CheWkin( the Net Contents of PaWa( ed Goods, 2015 Edition dModifiedg	
Sugar Profile by HPLC (SGLC_S:13)	Covance Laboratories - Madison
OffiWl Methods of Analysis of AOAC INTERNATIONAL 18th Ed), AOAC INTERNATIONAL, GaithersbJr( , MD, USA, c2005g OffiWl Method 982)14) dModifiedg	

Testing Location(s)	Released on Behalf of Covance by
Covance Laboratories - Madison	Lori Ross - Associate Director

CovanW Laboratories InW  
3301 Kinsman Blvd  
Madison u I 53704  
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#657

#4077

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## Certificate of Analysis

**Amin Talati & Upadhye, LLC**10541 Brookview Dr  
Carmel Indiana 46032 United States

Sample Name:	GT Trilogy	Covance Sample:	5162280
Project ID	AMIN_TA_UP-20160701-0002	Receipt Date	30-Jun-2016
PO Number	CVD	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	8 fl oz	Login Date	01-Jul-2016
Description	0226*D1B 8/1/16 6.1°C	Storage Condition	5 (+/- 3) degrees Celsius

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	3.1 g/Serving Size
Fructose	5.1 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	10 g/Serving Size
<b>Specific Gravity</b>	
Density	1.022 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.80 %

Method References	Testing Location
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

Testing Location(s)	Released on Behalf of Covance by
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Covance Laboratories Inc. 3301 Kinsman Blvd Madison WI 53704 800-675-8375	



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## Certificate of Analysis

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Carmel Indiana 46032 United States

<b>Sample Name:</b>	<b>GT Gingerade</b>	<b>Covance Sample:</b>	<b>5162383</b>
<b>Project ID</b>	AMIN_TA_UP-20160701-0002	<b>Receipt Date</b>	30-Jun-2016
<b>PO Number</b>	CVD	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	8 fl oz	<b>Login Date</b>	01-Jul-2016
<b>Description</b>	0626**E2B 08/05/16 5.5°C	<b>Storage Condition</b>	5 (+/- 3) degrees Celsius

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	2.7 g/Serving Size
Fructose	4.5 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	8.9 g/Serving Size
<b>Specific Gravity</b>	
Density	1.018 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.56 %

<b>Method References</b>	<b>Testing Location</b>
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

<b>Testing Location(s)</b>	<b>Released on Behalf of Covance by</b>
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#601

#4081

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Carmel Indiana 46032 United States

Sample Name:	GT Original	Covance Sample:	5162381
Project ID	AMIN_TA_UP-20160701-0002	Receipt Date	30-Jun-2016
PO Number	CVD	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	8 fl oz	Login Date	01-Jul-2016
Description	0266**FB 08/31/16 5.5°C	Storage Condition	5 (+/- 3) degrees Celsius

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	1 g/Serving Size
Glucose	2.9 g/Serving Size
Fructose	4.5 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	8.9 g/Serving Size
<b>Specific Gravity</b>	
Density	1.014 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.60 %

Method References	Testing Location
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

Testing Location(s)	Released on Behalf of Covance by
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#4083

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Sample Name:	GT Hibiscus Ginger	Covance Sample:	5162294
Project ID	AMIN_TA_UP-20160701-0002	Receipt Date	30-Jun-2016
PO Number	CVD	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	8 fl oz	Login Date	01-Jul-2016
Description	1326C*ABB 08/12/16 6.2°C	Storage Condition	5 (+/- 3) degrees Celsius

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	3.4 g/Serving Size
Glucose	2.4 g/Serving Size
Fructose	3.6 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	9.4 g/Serving Size
<b>Specific Gravity</b>	
Density	1.023 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.10 %

Method References	Testing Location
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

Testing Location(s)	Released on Behalf of Covance by
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## Certificate of Analysis

**Amin Talati & Upadhye, LLC**10541 Brookview Dr  
Carmel Indiana 46032 United States

<b>Sample Name:</b>	<b>GT Gingerade</b>	<b>Covance Sample:</b>	<b>5162293</b>
<b>Project ID</b>	AMIN_TA_UP-20160701-0002	<b>Receipt Date</b>	30-Jun-2016
<b>PO Number</b>	CVD	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	8 fl oz	<b>Login Date</b>	01-Jul-2016
<b>Description</b>	1326**F3B 08/12/16 6.2°C	<b>Storage Condition</b>	5 (+/- 3) degrees Celsius

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	2.9 g/Serving Size
Glucose	2.6 g/Serving Size
Fructose	3.9 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	9.4 g/Serving Size
<b>Specific Gravity</b>	
Density	1.018 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.09 %

<b>Method References</b>	<b>Testing Location</b>
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

<b>Testing Location(s)</b>	<b>Released on Behalf of Covance by</b>
Covance Laboratories - Madison	Lori Ross - Associate Director
Covance Laboratories Inc. 3301 Kinsman Blvd Madison WI 53704 800-675-8375	



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#4087

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## Certificate of Analysis

**Amin Talati & Upadhye, LLC**10541 Brookview Dr  
Carmel Indiana 46032 United States

<b>Sample Name:</b>	<b>GT Gingerade</b>	<b>Covance Sample:</b>	<b>5162500</b>
<b>Project ID</b>	AMIN_TA_UP-20160701-0002	<b>Receipt Date</b>	30-Jun-2016
<b>PO Number</b>	CVD	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	8 fl oz	<b>Login Date</b>	01-Jul-2016
<b>Description</b>	0826*D1B 8/7/16 5.1°C	<b>Storage Condition</b>	5 (+/- 3) degrees Celsius

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	2.7 g/Serving Size
Fructose	4.2 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	8.7 g/Serving Size
<b>Specific Gravity</b>	
Density	1.027 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.43 %

<b>Method References</b>	<b>Testing Location</b>
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

<b>Testing Location(s)</b>	<b>Released on Behalf of Covance by</b>
Covance Laboratories - Madison	Lori Ross - Associate Director
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Sample Name:	GT Original	Covance Sample:	5162503
Project ID	AMIN_TA_UP-20160701-0002	Receipt Date	30-Jun-2016
PO Number	CVD	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	8 fl oz	Login Date	01-Jul-2016
Description	2724*F1B 7/26/16 5.1°C	Storage Condition	5 (+/- 3) degrees Celsius

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	0.6 g/Serving Size
Glucose	3.5 g/Serving Size
Fructose	5.2 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	9.0 g/Serving Size
<b>Specific Gravity</b>	
Density	1.030 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.44 %

Method References	Testing Location
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

Testing Location(s)	Released on Behalf of Covance by
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## Certificate of Analysis

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<b>Sample Name:</b>	<b>GT Gingerade</b>	<b>Covance Sample:</b>	<b>5162501</b>
<b>Project ID</b>	AMIN_TA_UP-20160701-0002	<b>Receipt Date</b>	30-Jun-2016
<b>PO Number</b>	CVD	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	8 fl oz	<b>Login Date</b>	01-Jul-2016
<b>Description</b>	0826*D6B 8/7/16 5.1°C	<b>Storage Condition</b>	5 (+/- 3) degrees Celsius

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	2.5 g/Serving Size
Fructose	4.1 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	8.3 g/Serving Size
<b>Specific Gravity</b>	
Density	1.028 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.49 %

<b>Method References</b>	<b>Testing Location</b>
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

<b>Testing Location(s)</b>	<b>Released on Behalf of Covance by</b>
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<b>Sample Name:</b>	<b>GT Gingerberry</b>	<b>Covance Sample:</b>	<b>5162282</b>
<b>Project ID</b>	AMIN_TA_UP-20160701-0002	<b>Receipt Date</b>	30-Jun-2016
<b>PO Number</b>	CVD	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	8 fl oz	<b>Login Date</b>	01-Jul-2016
<b>Description</b>	2625C*B0B 7/25/16 6.1°C	<b>Storage Condition</b>	5 (+/- 3) degrees Celsius

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	0.4 g/Serving Size
Glucose	3.0 g/Serving Size
Fructose	5.3 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	8.7 g/Serving Size
<b>Specific Gravity</b>	
Density	1.017 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.89 %

<b>Method References</b>	<b>Testing Location</b>
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

<b>Testing Location(s)</b>	<b>Released on Behalf of Covance by</b>
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<b>Sample Name:</b>	<b>GT Gingerade</b>	<b>Covance Sample:</b>	<b>5160244</b>
<b>Project ID</b>	AMIN_TA_UP-20160701-0001	<b>Receipt Date</b>	01-Jul-2016
<b>PO Number</b>	CVD	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	8 fl oz	<b>Login Date</b>	01-Jul-2016
<b>Description</b>	0726*D1B 8/6/16 (Stated 2g / 30 Cal) 10.8°C	<b>Storage Condition</b>	5 (+/- 3) degrees Celsius

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	2.7 g/Serving Size
Fructose	4.2 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	8.9 g/Serving Size
<b>Specific Gravity</b>	
Density	1.020 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.35 %

<b>Method References</b>	<b>Testing Location</b>
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

<b>Testing Location(s)</b>	<b>Released on Behalf of Covance by</b>
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Sample Name:	GT Trilogy	Covance Sample:	5160245
Project ID	AMIN_TA_UP-20160701-0001	Receipt Date	01-Jul-2016
PO Number	CVD	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	8 fl oz	Login Date	01-Jul-2016
Description	1526**F3B 8/14/16 (Stated 2g / 30 Cal) 10.8°C	Storage Condition	5 (+/- 3) degrees Celsius

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	2.4 g/Serving Size
Glucose	3.7 g/Serving Size
Fructose	5.4 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	11 g/Serving Size
<b>Specific Gravity</b>	
Density	1.022 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.55 %

Method References	Testing Location
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

Testing Location(s)	Released on Behalf of Covance by
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Carmel Indiana 46032 United States

Sample Name:	<b>GT Original</b>	Covance Sample:	<b>5160246</b>
Project ID	AMIN_TA_UP-20160701-0001	Receipt Date	01-Jul-2016
PO Number	CVD	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	8 fl oz	Login Date	01-Jul-2016
Description	3025**A3B 8/28/16 Stated 2g / 30 Cal) 10.8°C	Storage Condition	5 (+/- 3) degrees Celsius

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	1 g/Serving Size
Glucose	3.1 g/Serving Size
Fructose	4.7 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	8.9 g/Serving Size
<b>Specific Gravity</b>	
Density	1.019 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.58 %

<b>Method References</b>	<b>Testing Location</b>
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

<b>Testing Location(s)</b>	<b>Released on Behalf of Covance by</b>
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## Certificate of Analysis

**Amin Talati & Upadhye, LLC**10541 Brookview Dr  
Carmel Indiana 46032 United States

Sample Name:	GT Lavender	Covance Sample:	5162292
Project ID	AMIN_TA_UP-20160701-0002	Receipt Date	30-Jun-2016
PO Number	CVD	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	8 fl oz	Login Date	01-Jul-2016
Description	0726**A9B 8/6/16 6.2°C	Storage Condition	5 (+/- 3) degrees Celsius

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	2.7 g/Serving Size
Fructose	4.1 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	8.9 g/Serving Size
<b>Specific Gravity</b>	
Density	1.018 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.37 %

Method References	Testing Location
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

Testing Location(s)	Released on Behalf of Covance by
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## Certificate of Analysis

### Amin Talati & Upadhye, LLC

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Carmel Indiana 46032 United States

<b>Sample Name:</b>	GT Multi-Green	<b>Covance Sample:</b>	5162291
<b>Project ID</b>	AMIN_TA_UP-20160701-0002	<b>Receipt Date</b>	30-Jun-2016
<b>PO Number</b>	CVD	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	8 fl oz	<b>Login Date</b>	01-Jul-2016
<b>Description</b>	1426*A8B 8/13/16 6.2°C	<b>Storage Condition</b>	5 (+/- 3) degrees Celsius

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	2.9 g/Serving Size
Fructose	4.5 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	9.4 g/Serving Size
<b>Specific Gravity</b>	
Density	1.018 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.41 %

<b>Method References</b>	<b>Testing Location</b>
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

<b>Testing Location(s)</b>	<b>Released on Behalf of Covance by</b>
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## Certificate of Analysis

**Amin Talati & Upadhye, LLC**10541 Brookview Dr  
Carmel Indiana 46032 United States

Sample Name:	GT Cranberry	Covance Sample:	5162290
Project ID	AMIN_TA_UP-20160701-0002	Receipt Date	30-Jun-2016
PO Number	CVD	Receipt Condition	Cold on Wet Ice or Ice Packs
Sample Serving Size	8 fl oz	Login Date	01-Jul-2016
Description	0626**A9B 8/5/16 6.2°C	Storage Condition	5 (+/- 3) degrees Celsius

Analysis	Result
<b>Sugar Profile by HPLC</b>	
Sucrose	3.0 g/Serving Size
Glucose	3.4 g/Serving Size
Fructose	4.2 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	10 g/Serving Size
<b>Specific Gravity</b>	
Density	1.021 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.12 %

Method References	Testing Location
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
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## Certificate of Analysis

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Carmel Indiana 46032 United States

<b>Sample Name:</b>	<b>GT Gingerade</b>	<b>Covance Sample:</b>	<b>5162281</b>
<b>Project ID</b>	AMIN_TA_UP-20160701-0002	<b>Receipt Date</b>	30-Jun-2016
<b>PO Number</b>	CVD	<b>Receipt Condition</b>	Cold on Wet Ice or Ice Packs
<b>Sample Serving Size</b>	8 fl oz	<b>Login Date</b>	01-Jul-2016
<b>Description</b>	0826*D9B 8/7/16 6.1°C	<b>Storage Condition</b>	5 (+/- 3) degrees Celsius

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
Sucrose	2 g/Serving Size
Glucose	2.3 g/Serving Size
Fructose	3.8 g/Serving Size
Maltose	<0.2 g/Serving Size
Lactose	<0.2 g/Serving Size
Total Sugar	8.2 g/Serving Size
<b>Specific Gravity</b>	
Density	1.015 g/mL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1.43 %

<b>Method References</b>	<b>Testing Location</b>
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol/Methanol by Headspace with GC-FID.	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - Checking the Net Contents of Packaged Goods, 2015 Edition (Modified)	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Official Methods of Analysis of AOAC INTERNATIONAL 18th Ed., AOAC INTERNATIONAL, Gaithersburg, MD, USA, (2005), Official Method 982.14. (Modified)	

<b>Testing Location(s)</b>	<b>Released on Behalf of Covance by</b>
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Carmel Indiana 46032 United States

<b>Sample Name:</b>	<b>GT Gingerade</b>	<b>Covance Sample:</b>	<b>5162281</b>
<b>Project ID</b>	AMIN_TA_UP-20160701-0002	<b>Receipt Date</b>	30-. °n-2016
<b>PO Number</b>	CVD	<b>Receipt Condition</b>	Cold on Jet Iue or Iue Pauks
<b>Sample Serving Size</b>	8 fl oz	<b>Login Date</b>	01-. °I-2016
<b>Description</b>	0826*D/ B 8(7(16 6gl)C	<b>Storage Condition</b>	5 W(- 3+deGrees Celsius)

<u>Analysis</u>	<u>Result</u>
<b>Sugar Profile by HPLC</b>	
S° urose	2 GServinGSize
F l° uose	2g3 GServinGSize
<l° utose	3g3 GServinGSize
Maltose	90g2 GServinGSize
Lautose	90g2 GServinGSize
Total S° Gar	8g2 GServinGSize
<b>Specific Gravity</b>	
Density	1g15 GmL
<b>Residual Ethanol and Methanol *</b>	
Ethanol v/v	1g43 %

<b>Method References</b>	<b>Testing Location</b>
<b>Residual Ethanol and Methanol (ETME_S:9)</b>	Covance Laboratories - Madison
Ethanol(Methanol by Headspace with F C-<IDg	
<b>Specific Gravity (SPGP_S:15)</b>	Covance Laboratories - Madison
NIST Handbook 133 - CheukinGthe Net Contents of PaukaGed Foods, 2015 Edition WModified+	
<b>Sugar Profile by HPLC (SGLC_S:13)</b>	Covance Laboratories - Madison
Offiuial Methods of Analysis of AOAC INTERNATIONAL 18th Edg AOAC INTERNATIONAL, Faithersb°rg MD, USA, W2005+, Offiuial Method / 82g14gWModified+	

<b>Testing Location(s)</b>	<b>Released on Behalf of Covance by</b>
Covance Laboratories - Madison	Lori Ross - Associate Director

Covance Laboratories Inug  
3301 Kinsman Blvd  
Madison J I 53704  
800-675-8375



2/ 18g1

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#6911

Report Date: 12-Jul-2016

Report Status: Final

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Fab Nle uab eD	Tg Tinder: erry	Covance Fab NleD	51SJ8J
Project I2	AMIN_TA_UP-20160701-0002	peceiNt 2 ate	30-. n-2016
PO unrb : er	CVD	peceiNt ConLition	Cold on ° et IJe or IJe PaJks
Fab Nle Fervind Fize	8 fl oz	Hodin 2 ate	01-). I-2016
2escriNtion	2625C*B0B	Ftorade ConLition	5 uW- 3cde+rees Celsi. s
	7/25/16		
	6(1gC		

**Analysis****pesmt****Fmdar Profile : y EPHC**

S. Jrose	0(4 +/Servin+ Size
Gl. Jose	3(0 +/Servin+ Size
Fr. Jtose	5(3 +/Servin+ Size
Maltose	<0(2 +/Servin+ Size
LaJtose	<0(2 +/Servin+ Size
Total S. +ar	8(7 +/Servin+ Size

**FNecific Trativity**

Density	1(017 +/mL
---------	------------

**pesiLmal htManol anL \* etManol (**

Ethanol v/v	1(89 %
-------------	--------

**\* etMol preferences****gestind Hocation****pesiLmal htManol anL \* etManol \_hg\* h9FD)****Covance Ha: oratories 0\* aLison**

Ethanol/Methanol by Headspace with GC-FID(

**FNecific Trativity \_FPT P9FD 5)****Covance Ha: oratories 0\* aLison**

NIST Handbook 133 - CheJkin+ the Net Contents of PaJka+ed Goods, 2015 Edition uModifiedc

**Fmdar Profile : y EPHC \_FT HC9FD 3)****Covance Ha: oratories 0\* aLison**OffiJial Methods of Analysis of AOAC INTERNATIONAL 18th Ed(, AOAC  
INTERNATIONAL, Gaithersb. r+, MD, USA, \2005c OffiJial Method 982(14( \uModifiedc**gestind Hocation\_s)****pleaseL on BeMalf of Covance : y****Covance Ha: oratories 0\* aLison****Hori poss 0Associate 2 irector**Covane Laboratories InJ(  
3301 Kinsman Blvd  
Madison ° 1 53704  
800-675-8375

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Sab Nle u ab eD	GT Cran: erry	Cogance Sab NleD	51- JJd0
vrolect j2	AMIN_TA_UP-20160701-0002	peceiNt 2 ate	30-. °n-2016
vl unb : er	CVD	peceiNt ConLition	Cold on J et lue or lue Pauks
Sab Nle SerginO Size	8 fl oz	HoOn 2 ate	01-. °l-2016
2escriNt ion	0626**A/ B 8(5(16 6g)C	StoraOe ConLition	5 W(- 3+deGrees Celsi° s

#### Analysis

pesmt

#### SmDar v profile : y EvHC

S° urose	3g) GServinGSize
F l° uose	3g) GServinGSize
<l° utose	4g) GServinGSize
Maltose	90g) GServinGSize
Lautose	90g) GServinGSize
Total S° Gar	10 GServinGSize

#### SNecific Gragity

Density	1g21 GmL
pesiLmal htManol anL * etManol (	

Ethanol v/v

1g2 %

#### \* etMol p eferences

#### TestinO Hocation

pesiLmal htManol anL * etManol _hT* h9SD)	Cogance Ha: oratories R* aLison
Ethanol(Methanol by Headspace with F C-<IDg	
SNecific Gragity _Sv Gv 9SD 5)	Cogance Ha: oratories R* aLison
NIST Handbook 133 - CheukinGthe Net Contents of PaukaGed Foods, 2015 Edition Wmodified+	
SmDar v profile : y EvHC _SGHC9SD 3)	Cogance Ha: oratories R* aLison
Offiuial Methods of Analysis of AOAC INTERNATIONAL 18th Edg AOAC INTERNATIONAL, Faithersb°rG MD, USA, W2005+, Offiuial Method / 82g14gWmodified+	

#### TestinO Hocation\_s)

#### pleaseL on BeMalf of Cogance : y

#### Cogance Ha: oratories R\* aLison

#### Hori poss RAssociate 2 irector

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Sab Nle u ab eD	GT g mlti0Green	Codance Sab NleD	51- JJv1
Project I2	AMIN_TA_UP-20160701-0002	peceiNt 2 ate	30-) . n-2016
PO unrb : er	CVD	peceiNt ConHition	Cold on ° et IJe or IJe PaJks
Sab Nle Serdinz SiLe	8 fl oz	Eoz in 2 ate	01-) . I-2016
2escriNtion	1426*A8B	Storaze ConHition	5 uW- 3cde+rees Celsi. s
	8/13/16		
	6(2gC		

#### Analysis

#### pesmt

##### Smzar Profile : y hPEC

S. Jrose	2 +/Servin+ Size
F.I. Jose	2(G+/Servin+ Size
<r. Jtose	4(5 +/Servin+ Size
Maltose	90(2 +/Servin+ Size
LaJtose	90(2 +/Servin+ Size
Total S. +ar	G4 +/Servin+ Size

##### SNecific Gradity

Density	1(018 +/mL
pesiHmal Mt* anol anHg et* anol (	

Ethanol v/v 1(41 %

#### g et\* oH p eferences

#### Testinz Eocation

##### pesiHmal Mt\* anol anHg et\* anol \_MTg M9SD)

Codance Ea: oratories 0g ahison

Ethanol/Methanol by Headspace with F C-<ID(

##### SNecific Gradity \_SPGP9SD 5)

Codance Ea: oratories 0g ahison

NIST Handbook 133 - CheJkin+ the Net Contents of PaJka+ed Foods, 2015 Edition uModifiedc

##### Smzar Profile : y hPEC \_SGEC9SD 3)

Codance Ea: oratories 0g ahison

OffiJial Methods of Analysis of AOAC INTERNATIONAL 18th Ed(, AOAC

INTERNATIONAL, Faithersb. r+, MD, USA, 2005c OffiJial Method G82(14( uModifiedc

#### Testinz Eocation\_s)

#### pleaseH on Be\* alf of Codance : y

##### Codance Ea: oratories 0g ahison

Eori poss 0Associate 2 irector

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Sa: ule ma: e2	GT gadenver	Codance Sa: ule2	51- 00P0
j rolect Q	AMIN_TA_UP-20160701-0002	Neceiut J ate	30-. ° n-2016
j z mb: Der	CVD	Neceiut Convition	Cold on J et Iue or Iue Pauks
Sa: ule SerdinL SiHe	8 fl oz	goLin J ate	01-. ° I-2016
J escription	0726**A/ B	StoraLe Convition	5 W(- 3+deGrees Celsi° s
	8(6(16		
	6g)C		

#### Analysis

Nesbit

#### SbLar j rofile Dy Ej gC

S° urose	2 GServinGSize
F l° uose	2g7 GServinGSize
<l° utose	4gl GServinGSize
Maltose	90g2 GServinGSize
Lautose	90g2 GServinGSize
Total S° Gar	8g GServinGSize

#### Suecific Gradity

Density	1g18 GmL
---------	----------

#### Nesivbal htManol anv \* etManol (

Ethanol v/v	1g7 %
-------------	-------

#### \* etMbv Neferences

TestinL gocation

#### Nesivbal htManol anv \* etManol \_hT\* h9S2P)

Codance gaDoratories R\* avison

Ethanol(Methanol by Headspace with F C-<IDg

#### Suecific Gradity \_Sj Gj 9S215)

Codance gaDoratories R\* avison

NIST Handbook 133 - CheukinGthe Net Contents of PaukaGed Foods, 2015 Edition Wmodified+

#### SbLar j rofile Dy Ej gC \_SGgC9S213)

Codance gaDoratories R\* avison

Offiuial Methods of Analysis of AOAC INTERNATIONAL 18th Edg AOAC

INTERNATIONAL, Faithersb° rG MD, USA, W2005+, Offiuial Method / 82g14gWmodified+

#### TestinL gocation\_s)

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#### Codance gaDoratories R\* avison

gori Noss RAssociate J irector

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peNort StatnsD

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Sab Nle u ab eD	GT Gingerade	Covance Sab NleD	51- JJP3
j rolect Q	AMIN_TA_UP-20160701-0002	peceiNt 2 ate	30-. °n-2016
j z unrb : er	CVD	peceiNt Condition	Cold on J et Iue or Iue Pauks
Sab Nle Serving SiLe	8 fl oz	Hogin 2 ate	01-. °I-2016
2escriNt ion	1326**/ 3B	Storage Condition	5 W(- 3+deGrees Celsi° s
	08(12(16		
	6g)C		

#### Analysis

pesmt

##### Smgar j rofile : y Ej HC

S° urose	2gF GServinGSize
<1° uose	2g6 GServinGSize
/ r° utose	3gF GServinGSize
Maltose	90g2 GServinGSize
Lautose	90g2 GServinGSize
Total S° Gar	Fg4 GServinGSize

##### SNecific Gravity

Density	1g18 GmL
---------	----------

##### pesidm al htManol and \* etManol (

Ethanol v/v	1gF %
-------------	-------

#### \* etMol preferences

Testing Hocation

##### pesidm al htManol and \* etManol \_hT\* h9SDP)

Covance Ha: oratories 0\* adison

Ethanol(Methanol by Headspace with < C-/ IDg

##### SNecific Gravity \_Sj Gj 9SD5)

Covance Ha: oratories 0\* adison

NIST Handbook 133 - CheukinGthe Net Contents of PaukaGed < oods, 2015 Edition Wmodified+

##### Smgar j rofile : y Ej HC \_SGHC9SD3)

Covance Ha: oratories 0\* adison

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#### Testing Hocation\_s)

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##### Covance Ha: oratories 0\* adison

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Carmel Indiana 46032 United States

Sab Nle u ab eD	GT gi: iscm s Ginder	Covance Sab NleD	51- JJP4
j rolect Q	AMIN_TA_UP-20160701-0002	peceiNt 2 ate	30-) . n-2016
j z unrb : er	CVD	peceiNt ConHition	Cold on ° et IJe or IJe PaJks
Sab Nle Servind SiLe	8 fl oz	Eodin 2 ate	01-) . l-2016
2escriNtion	1326C*ABB	Storade ConHition	5 uW- 3cde+rees Celsi. s
	08/12/16		
	6(2gC		

**Analysis****pesmt****Smdar j rofile : y gj EC**

S. Jrose	3(4 +/Servin+ Size
Gl. Jose	2(4 +/Servin+ Size
Fr. Jtose	3(6 +/Servin+ Size
Maltose	<0(2 +/Servin+ Size
LaJtose	<0(2 +/Servin+ Size
Total S. +ar	9(4 +/Servin+ Size

**SNecific Gravity**

Density	1(023 +/mL
---------	------------

**pesiHmal htManol anH \* etManol (**

Ethanol v/v	1(10 %
-------------	--------

**\* etMhP preferences****Testind Eocation****pesiHmal htManol anH \* etManol \_hT\* h9SD\***

Covance Ea: oratories 0\* ahison

Ethanol/Methanol by Headspace with GC-FID(

**SNecific Gravity \_Sj Gj 9SD 5)**

Covance Ea: oratories 0\* ahison

NIST Handbook 133 - CheJkin+ the Net Contents of PaJka+ed Goods, 2015 Edition uModifiedc

**Smdar j rofile : y gj EC \_SGEC9SD 3)**

Covance Ea: oratories 0\* ahison

Offijial Methods of Analysis of AOAC INTERNATIONAL 18th Ed(, AOAC

INTERNATIONAL, Gaithersb. r+, MD, USA, 2005c, Offijial Method 982(14( uModifiedc

**Testind Eocation\_s)****pleaseH on BeMalf of Covance : y****Covance Ea: oratories 0\* ahison**

Eori poss 0Associate 2 irector

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Sab Nle u ab eD	GT g ridinal	Covance Sab NleD	51- J381
Project I2	AMIN_TA_UP-20160701-0002	peceiNt 2 ate	30-. °n-2016
Pg unrb : er	CVD	peceiNt Conzition	Cold on J et lue or lue Pauks
Sab Nle Servind SiQe	8 fl oz	Lodin 2 ate	01-. °I-2016
2escriNt ion	0266**/ B 08(31(16 5g)C	Storade Conzition	5 W(- 3+deGrees Celsi° s

**Analysis****pesmt****Smdar Profile : y HPLC**

S° urose	1 GServinGSize
<1° uose	2gF GServinGSize
/ r° utose	4gF GServinGSize
Maltose	90g2 GServinGSize
Lautose	90g2 GServinGSize
Total S° Gar	8gF GServinGSize

**SNecific Gravity**

Density	1g14 GmL
---------	----------

**pesiz mal Ethanol anz Methanol \***

Ethanol v/v	1g60 %
-------------	--------

**Methoz preferences****Testind Location****pesiz mal Ethanol anz Methanol (ETME\_SD)**

Covance La: oratories 0Mazison

Ethanol(Methanol by Headspace with &lt; C-/ IDg

**SNecific Gravity (SPGP\_SD5)**

Covance La: oratories 0Mazison

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**Smdar Profile : y HPLC (SGLC\_SD3)**

Covance La: oratories 0Mazison

Offiuial Methods of Analysis of AOAC INTERNATIONAL 18th Edg AOAC

INTERNATIONAL, &lt; aithersb°rG MD, USA, W2005+, Offiuial Method F82g14gWModified+

**Testind Location(s)**

pleaseez on Behalf of Covance : y

**Covance La: oratories 0Mazison**

Lori poss 0Associate 2 irector

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1J06m0JR1-

peNort StatnsD

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Fa: ule ma: e7	TOT ingerave	CoPance Fa: ule7	5102686
j rolect zJ	AMIN_TA_UP-20160701-0002	Neceiut J ate	30-. ° n-2016
j d mb: Der	CVD	Neceiut Convition	Cold on J et Iue or Iue Pauks
Fa: ule FerPing FiLe	8 fl oz	Hogin J ate	01-. ° I-2016
J escription	0626**/ 2B 08(05(16 5g)C	Ftorage Convition	5 W(- 3+deGrees Celsi° s

#### Analysis

#### Nesbit

##### Fbgar j rofile Dy Ej HC

S° urose	2 GServinGSize
F l° uose	2g7 GServinGSize
< l° utose	4g GServinGSize
Maltose	90g2 GServinGSize
Lautose	90g2 GServinGSize
Total S° Gar	8g%GServinGSize

##### Fuecific TraPity

Density	1g18 GmL
---------	----------

##### Nesivbal htManol anv \* etManol (

/ thanol v/v	1g56 E
--------------	--------

#### \* etMbv Neferences

#### Oesting Hocation

##### Nesivbal htManol anv \* etManol \_hO\* h9F7 3

CoPance HaDoratories R\* avison

/ thanol(Methanol by Headspace with F C-<IDg

##### Fuecific TraPity \_Fj Tj 9F7153

CoPance HaDoratories R\* avison

NIST Handbook 133 - CheukinGthe Net Contents of PaukaGed Foods, 2015 / dition WModified+

##### Fbgar j rofile Dy Ej HC \_FT HC9F7163

CoPance HaDoratories R\* avison

Offiuial Methods of Analysis of AOAC INT/ RNATIONAL 18th / dg AOAC

INT/ RNATIONAL, Faithersb°rG MD, USA, W2005+, Offiuial Method %82g14gWModified+

#### Oesting Hocation\_s3

#### Neleasev on BeMalf of CoPance Dy

##### CoPance HaDoratories R\* avison

Hori Noss RAssociate J irector

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Neuort J ate7 12RSbir2p10

Neuort Fstats7

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written auuroPal of CoPance.

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Carmel Indiana 46032 United States

Fab Nle uab eD	TOT ingerave	CoPance Fab NleD	51SJ5RR
j rolect z7	AMIN_TA_UP-20160701-0002	peceiNt 7 ate	30-. n-2016
j d unrb : er	CVD	peceiNt Convition	Cold on ° et IJe or IJe PaJks
Fab Nle FerPing FiLe	8 fl oz	Hogin 7 ate	01-). l-2016
7 escriNtion	0826*D1B	Fstorage Convition	5 uW- 3cde+rees Celsi. s
	8/7/16		
	5(1gC		

#### Analysis

#### pesmt

##### Fmgar j rofile : y Ej HC

S. Jrose	2 +/Servin+ Size
Gl. Jose	2(7 +/Servin+ Size
Fr. Jtose	4(2 +/Servin+ Size
Maltose	<0(2 +/Servin+ Size
LaJtose	<0(2 +/Servin+ Size
Total S. +ar	8(7 +/Servin+ Size

##### FNecific T raPity

Density	1(027 +/mL
---------	------------

##### pesivmal htManol anv \* etManol (

%ethanol v/v	1(43 9
--------------	--------

#### \* etMolv preferences

#### Oesting Hocation

##### pesivmal htManol anv \* etManol \_hO\* h9FD 3

CoPance Ha: oratories - \* avison

%ethanol/Methanol Ey b eadspaje with GC-FID(

##### FNecific T raPity \_Fj Tj 9FD 53

CoPance Ha: oratories - \* avison

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##### Fmgar j rofile : y Ej HC \_FT HC9FD 63

CoPance Ha: oratories - \* avison

Hffijial Methods of Analysis of AHAC INT%ONATIHNAL 18th %d(, AHAC

INT%ONATIHNAL, GaithersE. r+, MD, USA, 2005c, Hffijial Method R82(14( uModifiedc

#### Oesting Hocation\_s3

#### pleaseav on BeMalf of CoPance : y

##### CoPance Ha: oratories - \* avison

Hori poss - Associate 7 irector

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written aNNropal of CoPance.

## Certificate of Analysis

### Amin Talati & Upadhye, LLC

10541 Brookview Dr  
Carmel Indiana 46032 United States

Fab Nle uab eD	TOT ingerave	CoPance Fab NleD	51SJ5R1
j rolect z7	AMIN_TA_UP-20160701-0002	peceiNt 7 ate	30-. n-2016
j d unrb : er	CVD	peceiNt Convition	Cold on ° et IJe or IJe PaJks
Fab Nle FerPing FiLe	8 fl oz	Hogin 7 ate	01-). I-2016
7 escription	0826*D6B	Fstorage Convition	5 uW- 3cde+rees Celsi. s
	8/7/16		
	5(1gC		

#### Analysis

#### pesmt

##### Fmgar j rofile : y Ej HC

S. Jrose	2 +/Servin+ Size
Gl. Jose	2(5 +/Servin+ Size
Fr. Jtose	4(1 +/Servin+ Size
Maltose	<0(2 +/Servin+ Size
LaJtose	<0(2 +/Servin+ Size
Total S. +ar	8(3 +/Servin+ Size

##### FNecific T raPity

Density	1(028 +/mL
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##### pesivmal htManol anv \* etManol (

Ethanol v/v	1(49 %
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#### \* etMbv preferences

#### Oesting Hocation

##### pesivmal htManol anv \* etManol \_hO\* h9FD 3

CoPance Ha: oratories - \* avison

Ethanol/Methanol by Headspace with GC-FID(

##### FNecific T raPity \_Fj Tj 9FD 53

CoPance Ha: oratories - \* avison

NIST Handbook 133 - CheJkin+ the Net Contents of PaJka+ed Goods, 2015 Edition uModifiedc

##### Fmgar j rofile : y Ej HC \_FT HC9FD 63

CoPance Ha: oratories - \* avison

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INTERNATIONAL, Gaithersb. r+, MD, USA, \2005c Offijial Method 982(14( \uModifiedc

#### Oesting Hocation\_s3

#### pleaseav on BeMalf of CoPance : y

##### CoPance Ha: oratories - \* avison

Hori poss - Associate 7 irector

Covane Laboratories InJ(  
3301 Kinsman Blvd  
Madison ° I 53704  
800-675-8375



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Pa+e 1 of 2



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peNort 7 ateL

1J-2ml-JR1S

peNort FfamsD

Ginal

## Certificate of Analysis

Amin Talati & Upadhye, LLC

10541 Brookview Dr  
Carmel Indiana 46032 United States

OMSe resnits aNNy only to tMb iteb s testev. OM's certificate of analysis sMall not : e reNrovncev, exceNt in its entirety, witMbrnt tM  
written aNNropal of CoPance.

Neuort J ate7

Neuort Gtats7

Tinal

## Certificate of Analysis

### Amin Talati & Upadhye, LLC

10541 Brookview Dr  
Carmel Indiana 46032 United States

Ga: ule ma: e7	Og grilovy	CoPance Ga: ule7	51F25p2
j rolect zJ	AMIN_TA_UP-20160701-0002	Neceiut J ate	30-. n-2016
j d mb: Der	CVD	Neceiut ConHition	Cold on ° et IJe or IJe PaJks
Ga: ule GerPinv GiLe	8 fl oz	Eovin J ate	01-). I-2016
Jescrituon	0226*C4B	Gtorave ConHition	5 uW- 3cde+rees Celsi. s
	8/1/16		
	5(1gC		

#### Analysis

#### Nesbit

##### Gbvar j rofile Dy hJ EC

S. Jrose	2 +/Servin+ Size
Gl. Jose	2(5 +/Servin+ Size
Fr. Jtose	4(7 +/Servin+ Size
Maltose	<0(2 +/Servin+ Size
LaJtose	<0(2 +/Servin+ Size
Total S. +ar	9(1 +/Servin+ Size

##### Guecific OraPity

Density	1(037 +/mL
---------	------------

##### NesiHbal Mt\* anol anH ( et\* anol \_

Ethanol v/v	2(54 %
-------------	--------

#### ( et\* oH Neferences

#### gestinv Eocation

##### NesiHbal Mt\* anol anH ( et\* anol 9Mg( M) G7-3

CoPance EaDoratories R( aHison

Ethanol/Methanol by Headspace with GC-FID(

##### Guecific OraPity 9Gj Oj ) G7153

CoPance EaDoratories R( aHison

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##### Gbvar j rofile Dy hJ EC 9GOEC) G7163

CoPance EaDoratories R( aHison

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#### gestinv Eocation9s3

#### NeleaseH on Be\* alf of CoPance Dy

##### CoPance EaDoratories R( aHison

Eori Noss RAssociate Jirector

Covane Laboratories InJ(  
3301 Kinsman Blvd  
Madison ° I 53704  
800-675-8375



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\_g\* is analysis is not zGd accreHiteH.

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Pa+e 1 of 2



#4133

Neuort J ate7 12RSbir2p1F

Neuort Gtats7

Tinal

## Certificate of Analysis

Amin Talati & Upadhye, LLC

10541 Brookview Dr  
Carmel Indiana 46032 United States

g\* ese resblts auuly only to t\* e ite: s testeH. g\* is certificate of analysis s\* all not De reuroHbceH, except in its entirety, wit\* obt t\* e written auuroPal of CoPance.



#4134

Report Date: 120Jul02-16

Report Status: Final

## Certificate of Analysis

### Amin Talati & Upadhye, LLC

10541 Brookview Dr  
Carmel Indiana 46032 United States

Sample Name:	GT gridinal	Covance Sample:	51625-3
Project ID	AMIN_TA_UP-20160701-0002	Receipt Date	30-. °n-2016
Pg Number	CVD	Receipt Conzition	Cold on J et lue or lue Pauks
Sample Servind SiQe	8 fl oz	Lodin Date	01-. °l-2016
Description	2724*/ 1B 7(26(16 5gl)C	Storade Conzition	5 W(- 3+deGrees Celsi° s

Analysis	Result
Sudar Profile by HPLC	
S° urose	0g6 GServinGSize
F l° uose	3g5 GServinGSize
/ r° utose	5g2 GServinGSize
Maltose	<0g2 GServinGSize
Lautose	<0g2 GServinGSize
Total S° Gar	9g0 GServinGSize
Specific Gravity	
Density	1g30 GmL
Resizual Ethanol anz Methanol *	
Ethanol v/v	1g44 %

Methoz References	Testind Location
Resizual Ethanol anz Methanol (ETME_S:9)	Covance Laboratories 0Mazison
Ethanol(Methanol by Headspae with F C-/ IDg	
Specific Gravity (SPGP_S:15)	Covance Laboratories 0Mazison
NIST Handbook 133 - CheukinGthe Net Contents of PaukaGed Foods, 2015 Edition Wmodified+	
Sudar Profile by HPLC (SGLC_S:13)	Covance Laboratories 0Mazison
Offiuial Methods of Analysis of AOAC INTERNATIONAL 18th Edg AOAC INTERNATIONAL, Faithersb°rG MD, USA, W2005+, Offiuial Method 982g14gWmodified+	

Testind Location(s)	Releasez on Behalf of Covance by
Covance Laboratories 0Mazison	Lori Ross 0Associate Director

Covane Laboratories Inug  
3301 Kinsman Blvd  
Madison J I 53704  
800-675-8375



2918g1

\* This analysis is not ISg acrezitez.

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PaGe 1 of 2



#4135

Report Date: 120Jul02-16

Report Status: Final

## Certificate of Analysis

Amin Talati & Upadhye, LLC

10541 Brookview Dr  
Carmel Indiana 46032 United States

These results apply only to the items testeze. This certificate of analysis shall not be reprozucez, except in its entirety, without the written approval of Covance.



peNort 2 ateL 1J06m0SR1-

peNort FfamsD Ginal

FmNerceTes D 1548J- 50R

## Certificate of Analysis

### Amin Talati & Upadhye, LLC

10541 Brookview Dr  
Carmel Indiana 46032 United States

Fab Nle u ab eD	g d v riPinal	Coj ance Fab NleD	51-SJ81
I ro@ct z2	AMIN_TA_UP-20160701-0002	peceiNt 2 ate	30-. °n-2016
I v unb : er	CVD	peceiNt ConTition	Cold on J et lue or lue Pauks
Fab Nle Ferj inP FiLe	8 fl oz	HoPin 2 ate	01-. °I-2016
2escriNtion	0266**/ 1B 08(31(16 56)C	FtoraPe ConTition	5 W(- 3+deGrees Celsi°s

#### Analysis

pesmt

#### FnPar I rofile : y El HC

S° urose	1 GServinGSize
< l° uose	2gF GServinGSize
/ r° utose	4g5 GServinGSize
Maltose	90g2 GServinGSize
Lautose	90g2 GServinGSize
Total S° Gar	8gF GServinGSize

#### FNecific g raj ity

Density	1g14 g/mL
---------	-----------

#### pesiTmal htManol anT \* etManol (

Ethanol v(v	1g60 %
-------------	--------

#### \* etMoT preferences

destinP Hocation

#### pesiTmal htManol anT \* etManol \_hd\* h9FD

Coj ance Ha: oratories 0\* aTison

Ethanol(Methanol by Headspae with < C-/ IDg

#### FNecific g raj ity \_FI gI 9FD

Coj ance Ha: oratories 0\* aTison

NIST Handbook 133 - CheukinGthe Net Contents of PaukaGed < oods, 2015 Edition WModified+

#### FnPar I rofile : y El HC \_Fg HC9FD

Coj ance Ha: oratories 0\* aTison

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#### destinP Hocation\_s)

peleaseT on BeMalf of Coj ance : y

#### Coj ance Ha: oratories 0\* aTison

Hori p oss 0Associate 2 irector

Covance Laboratories Inug  
3301 Kinsman Blvd  
Madison J I 53704  
800-675-8375



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PaGe 1 of 2

## Certificate of Analysis

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Carmel Indiana 46032 United States

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# EXHIBIT 2

Exhibit 2: Images of GT's samples tested in February 2019





Temperature check of refrigerator where GT's was purchased on February 20, 2019

GTS  
Organic Seasonal Komb



Inspection of GT's samples















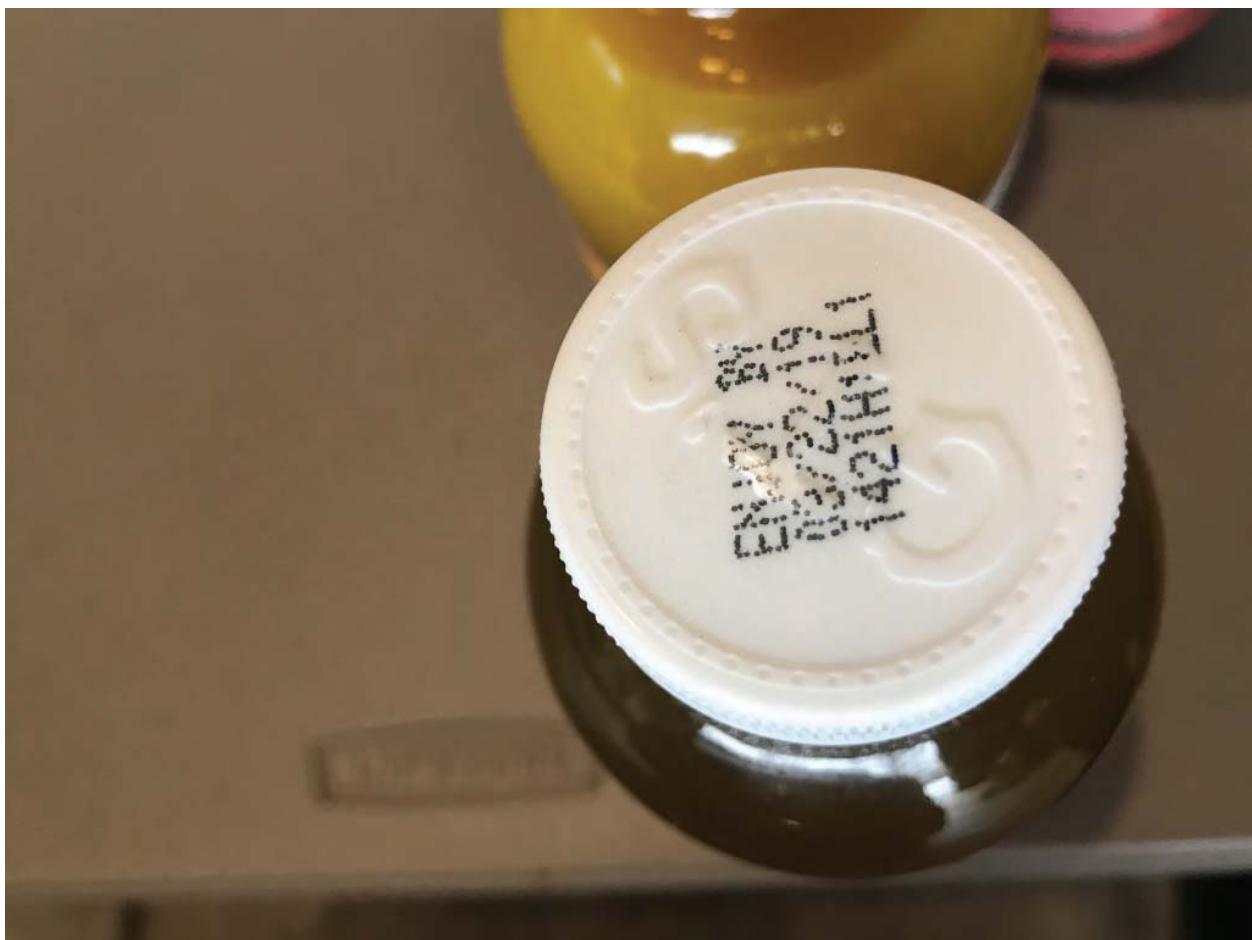




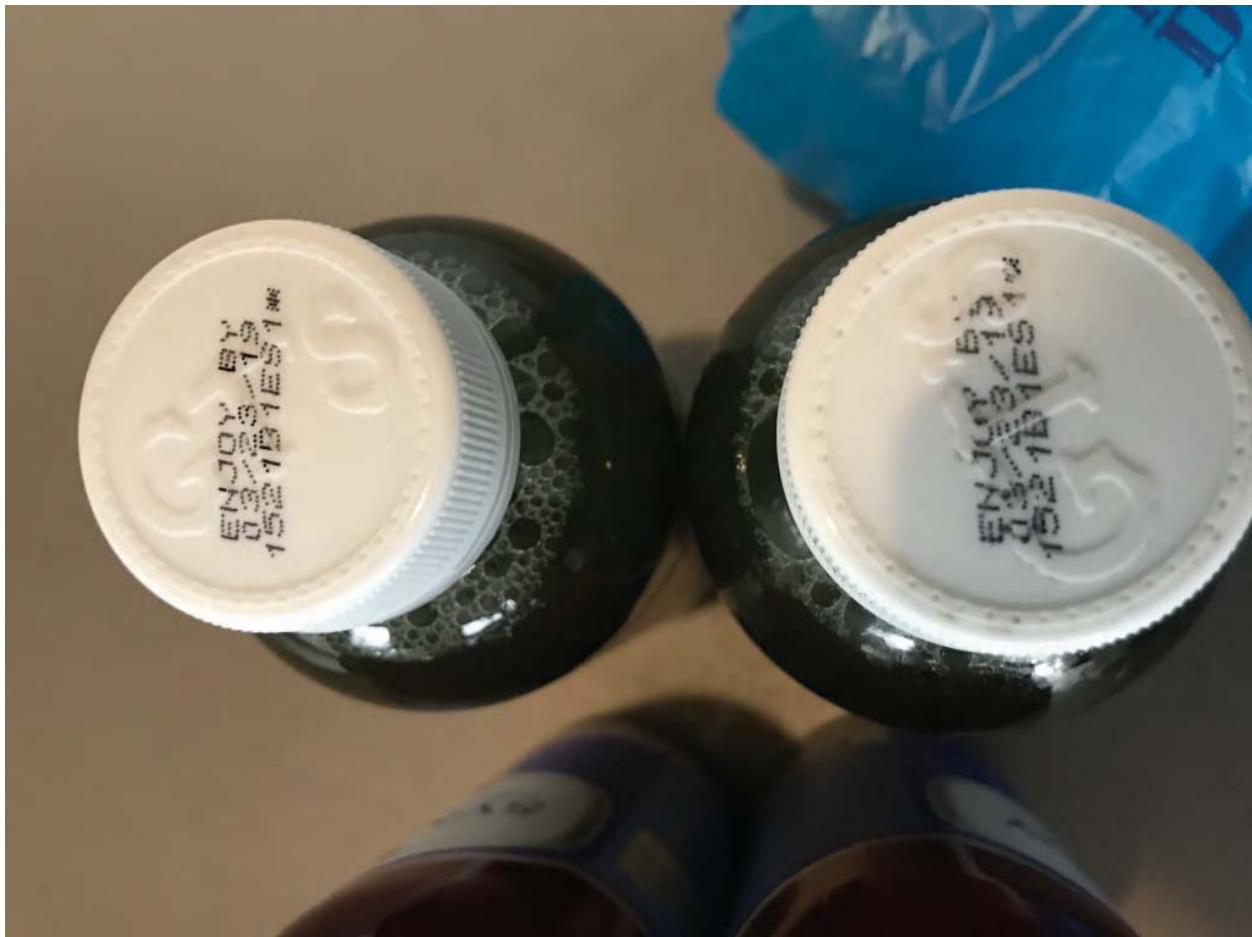


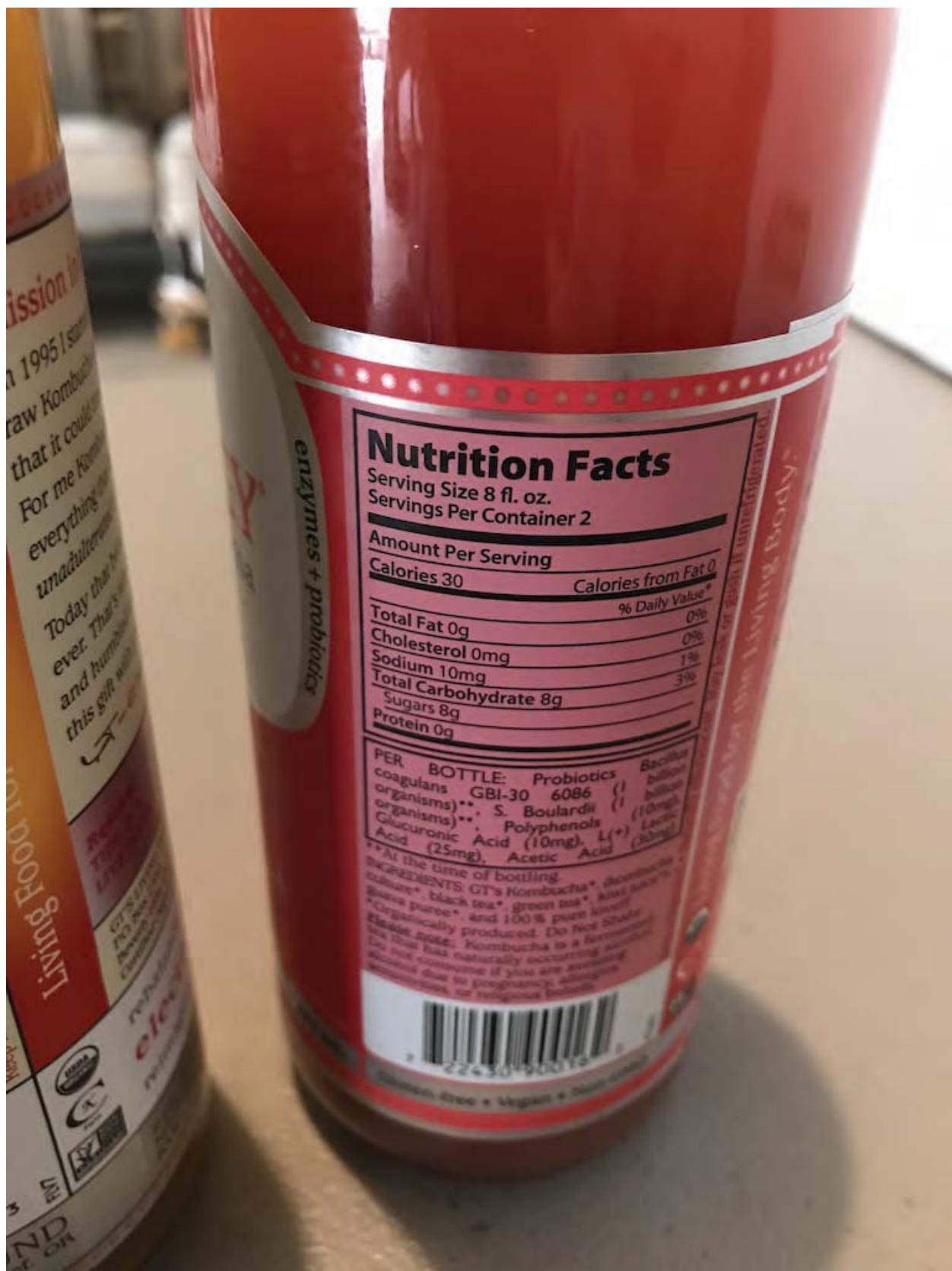


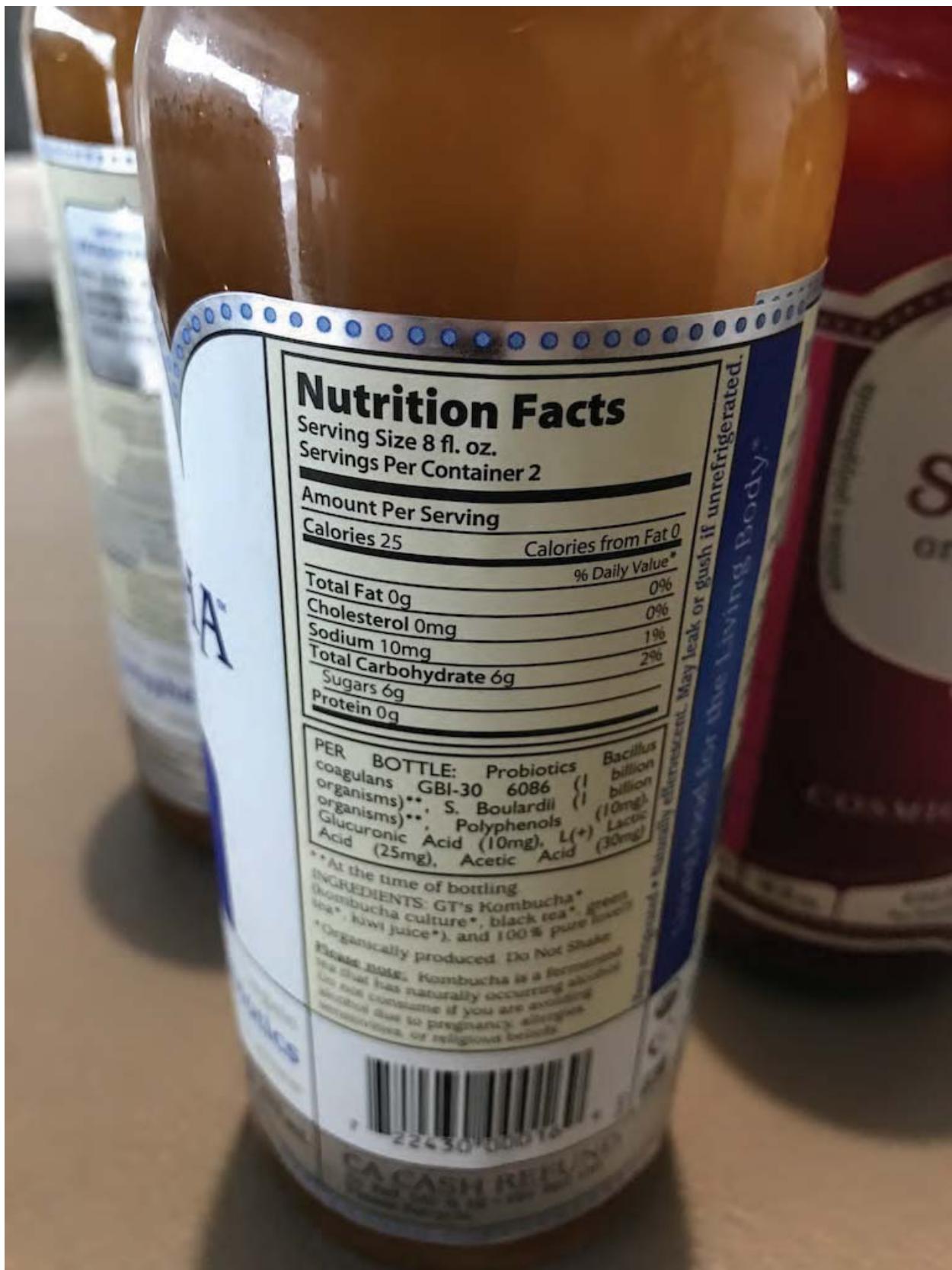


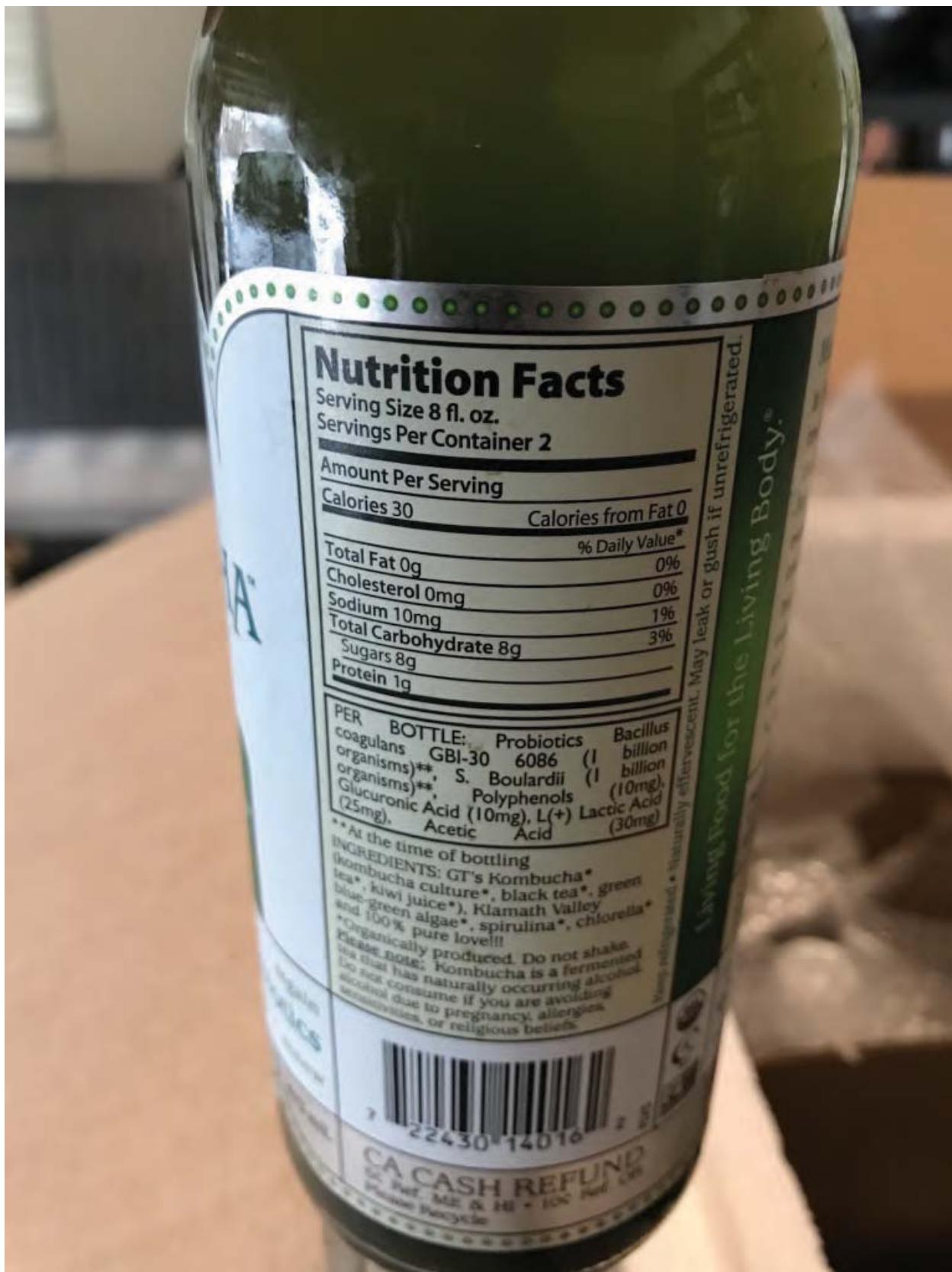












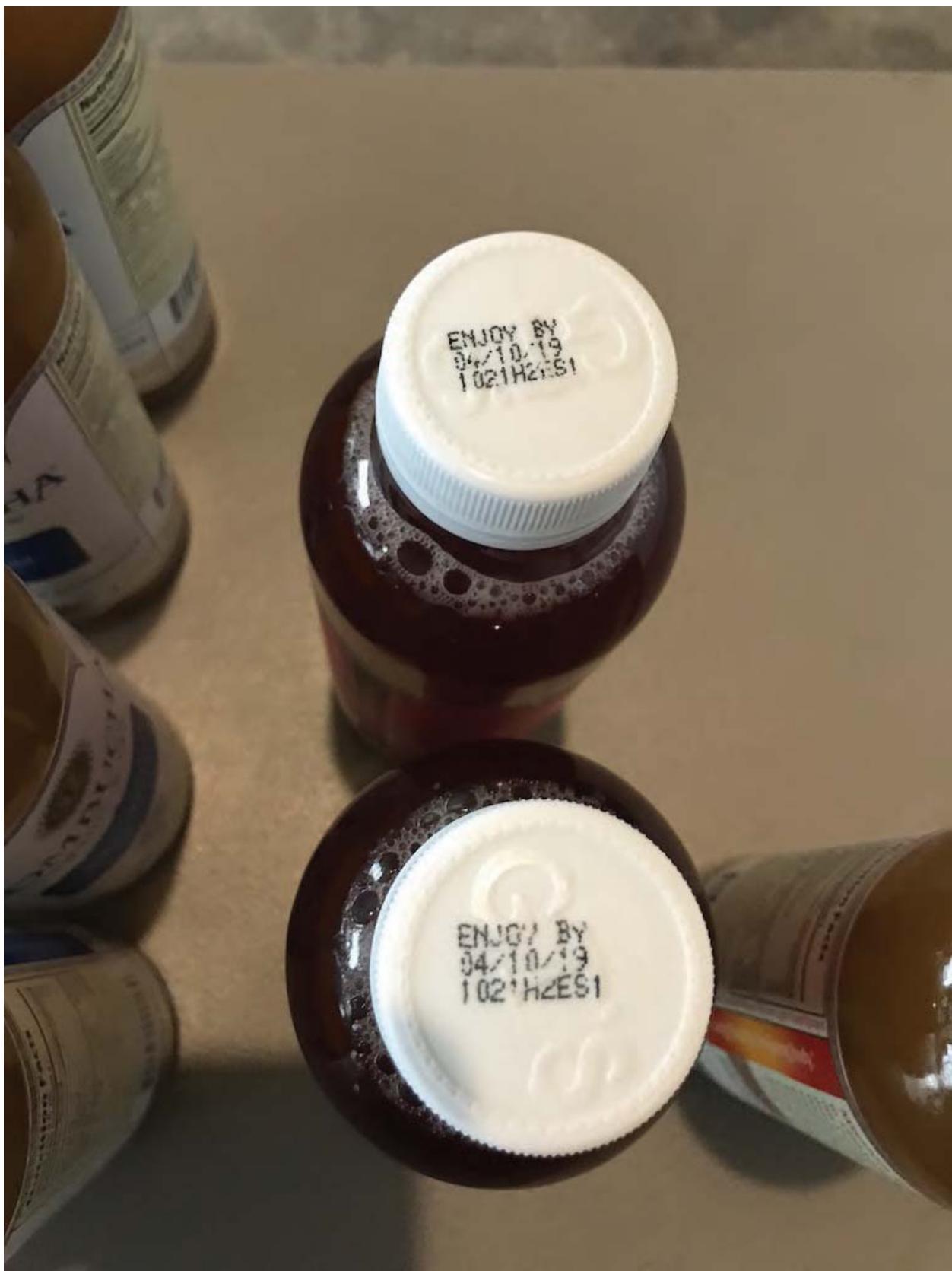


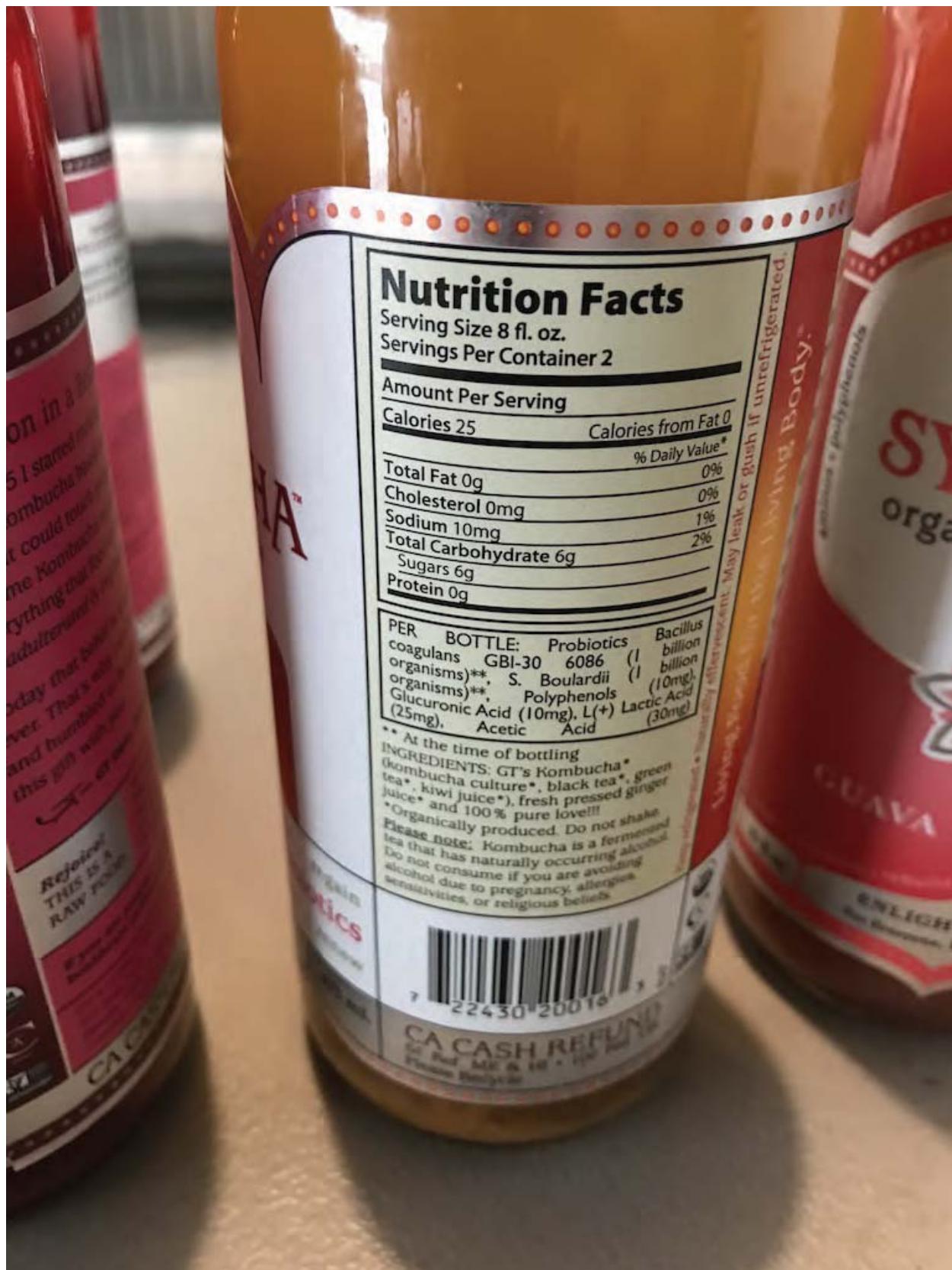


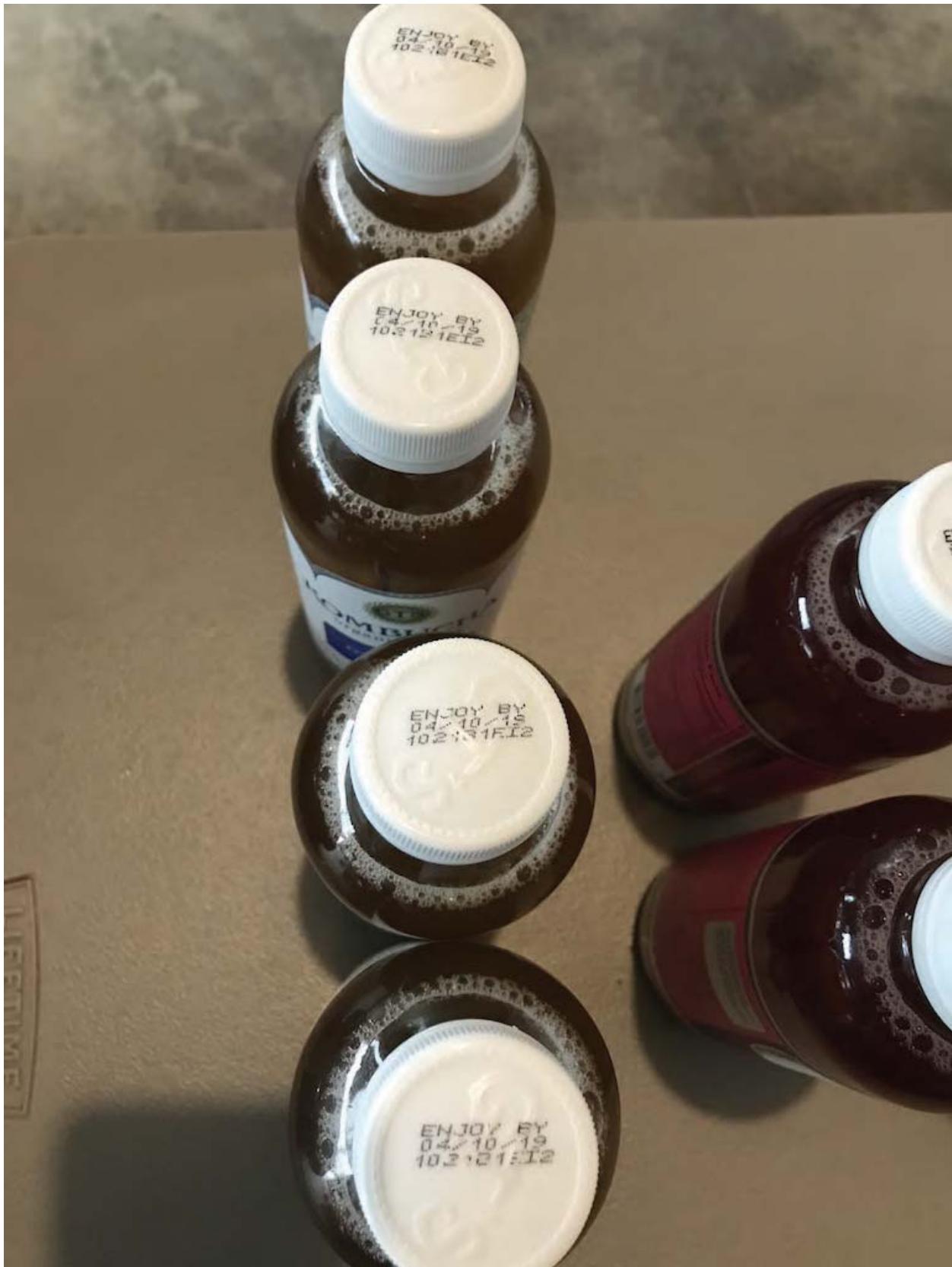








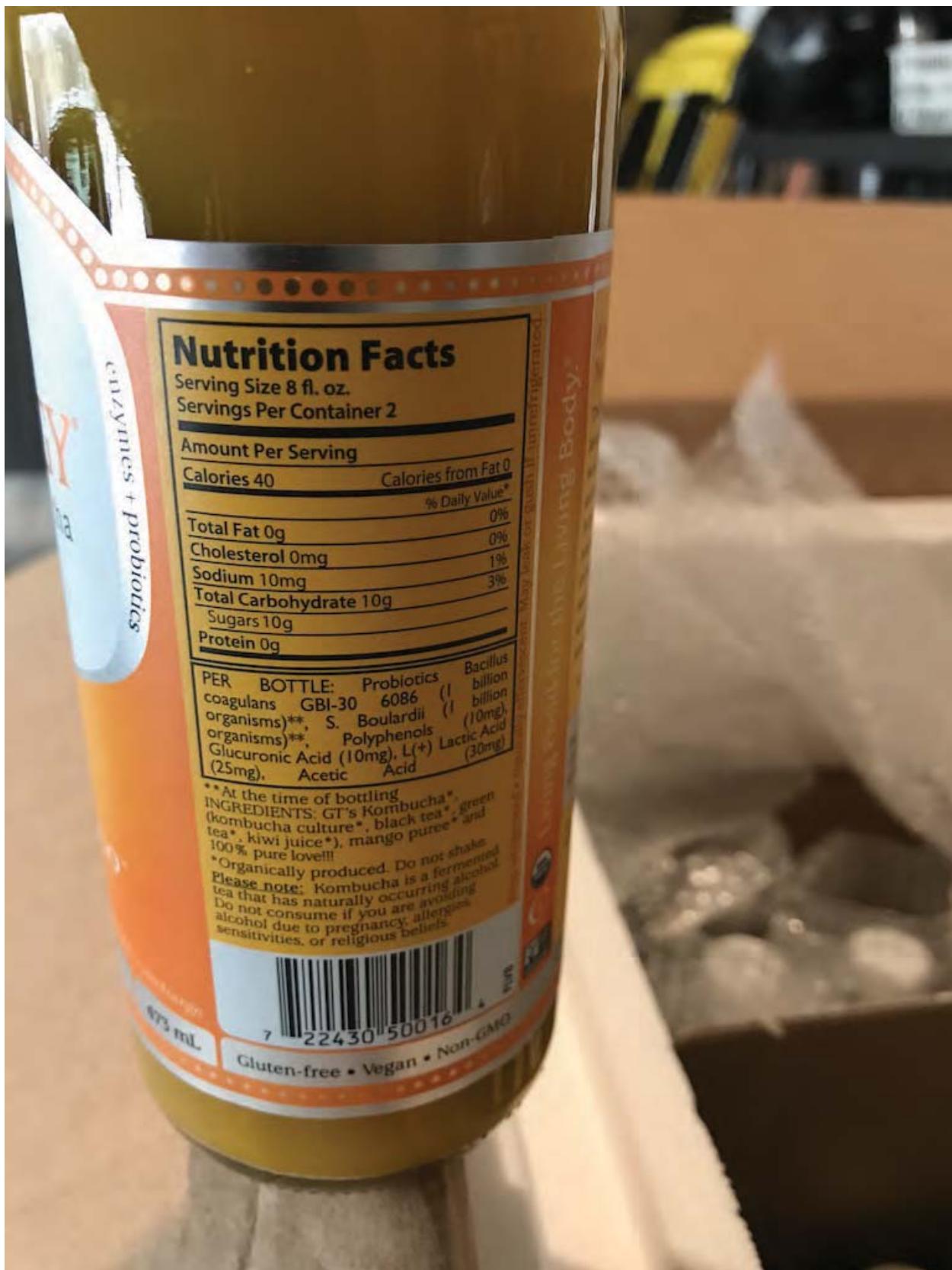


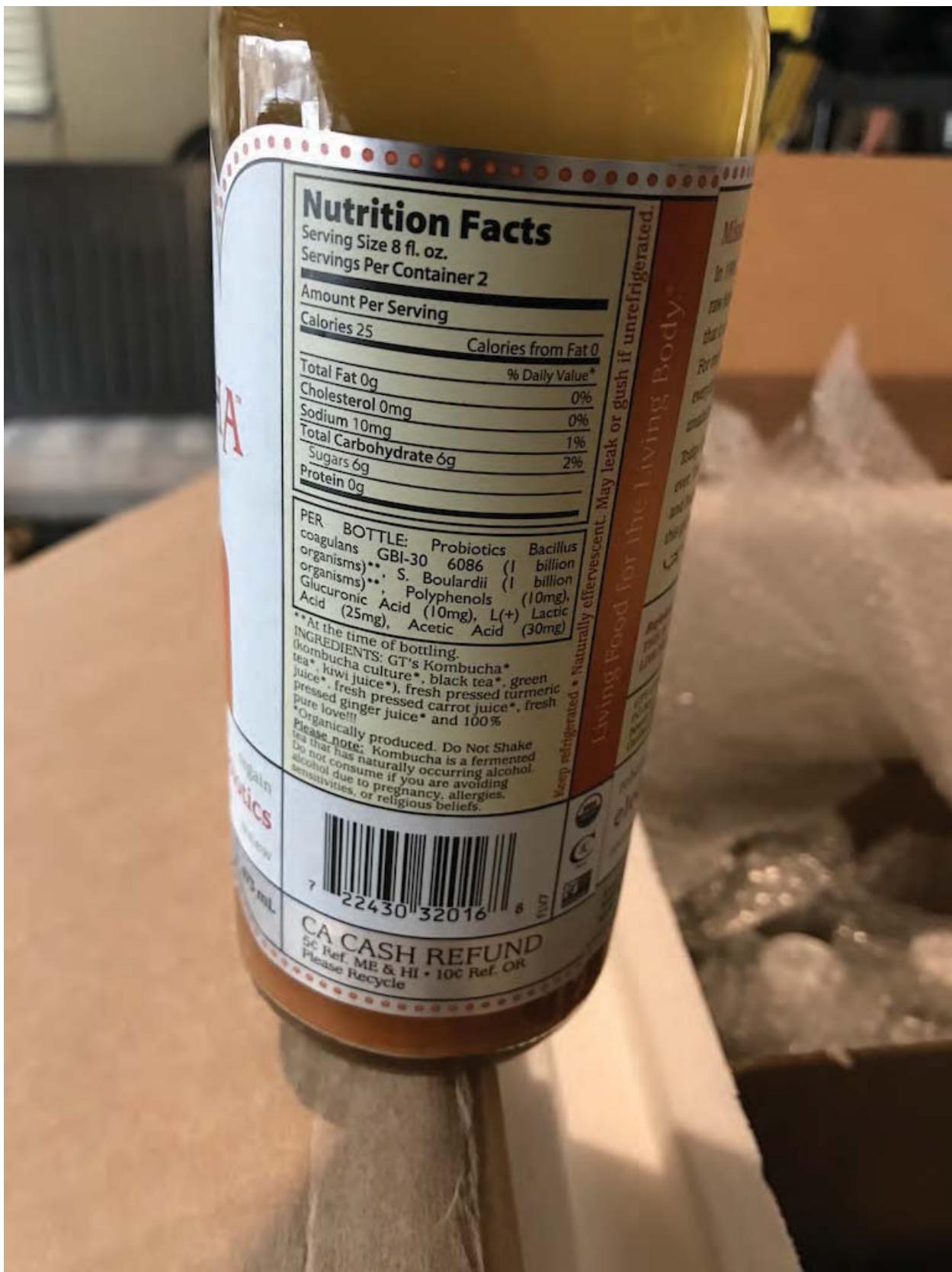


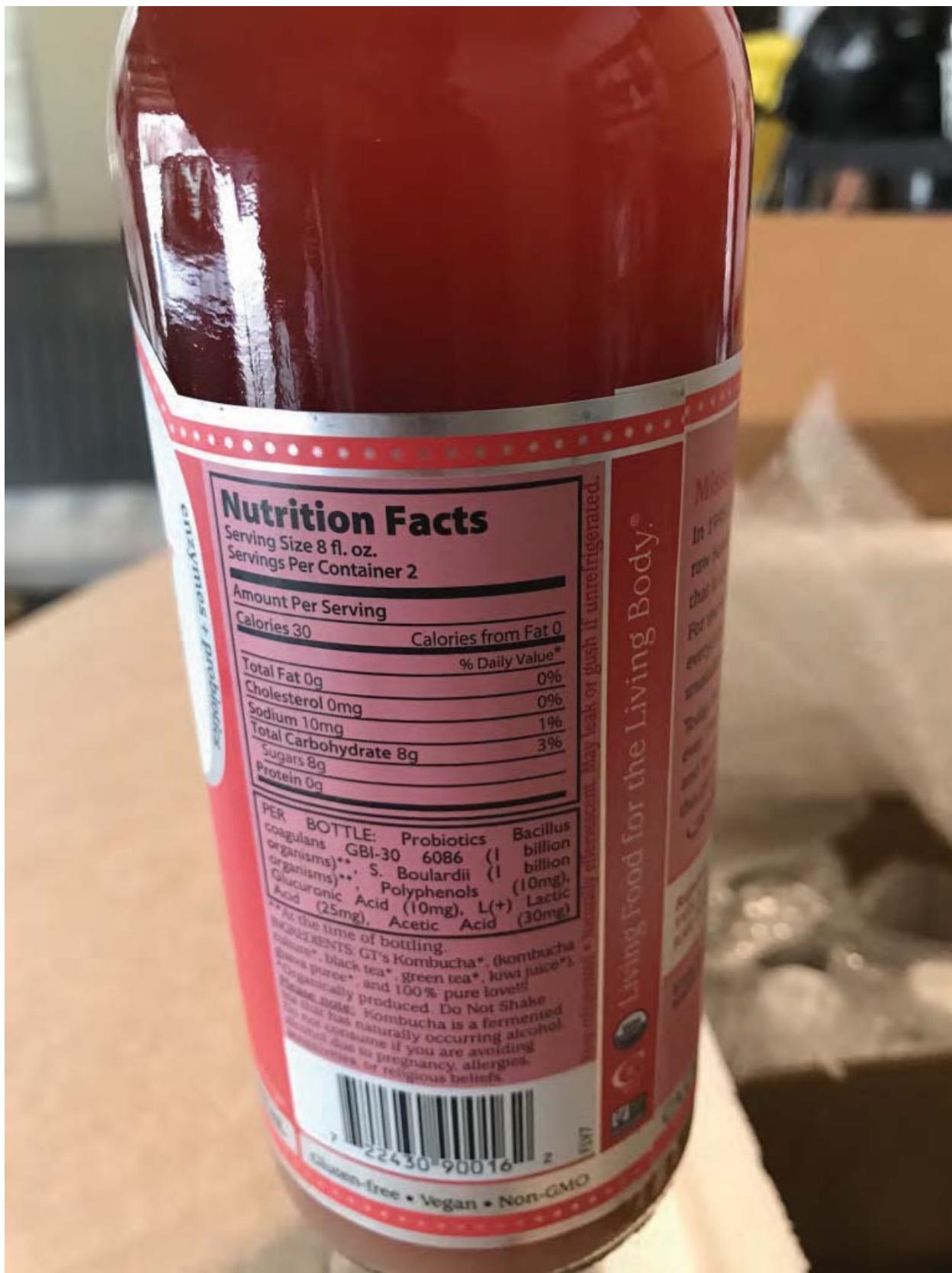












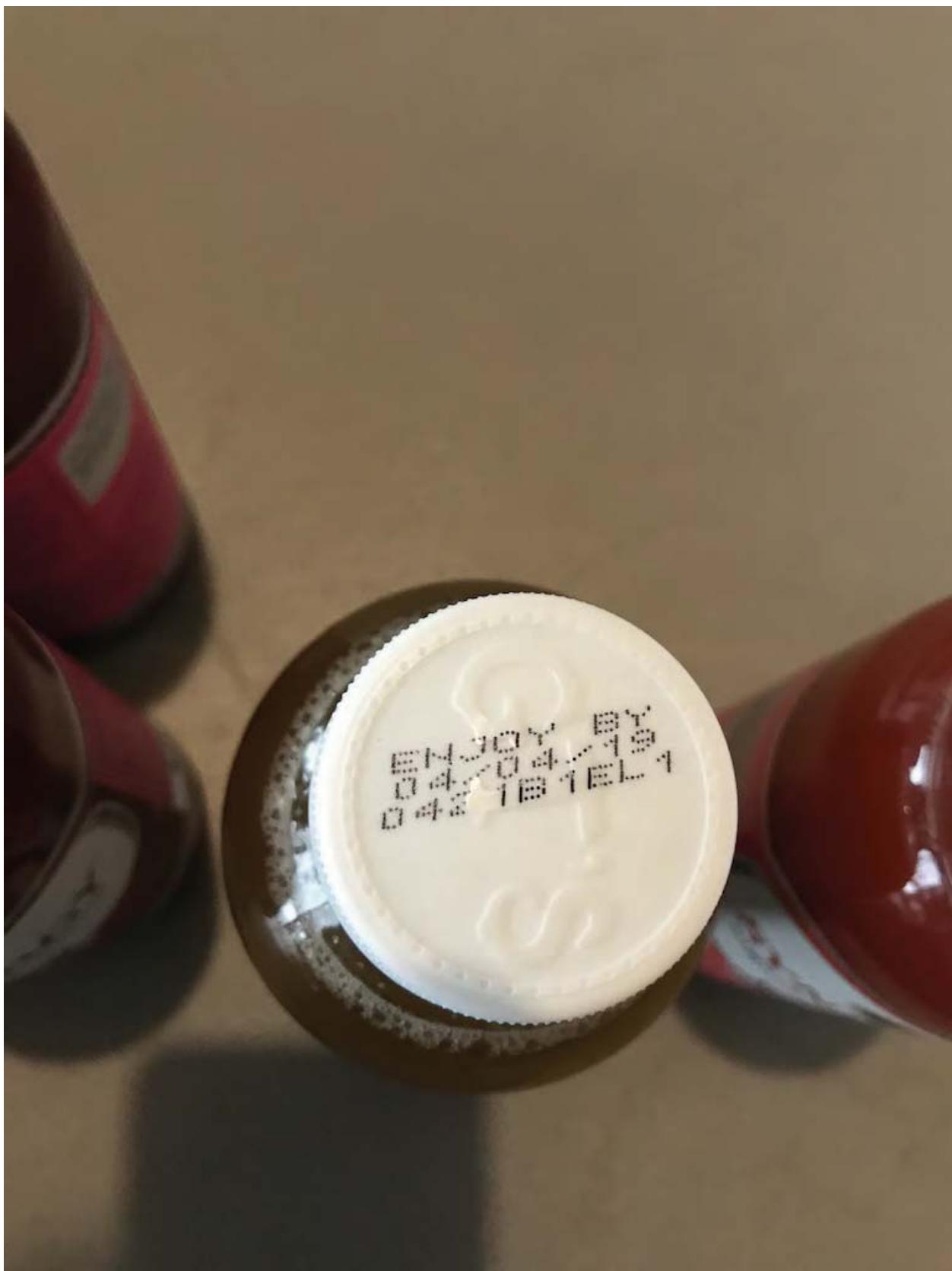












# EXHIBIT 3

Exhibit 2: Images from testing of GT's Kombucha in 2016.



Temperature check of store shelf where GT's was purchased



December 14, 2015 at 12:26:17 PM

Shelf location where GT's was purchased



December 14, 2015 at 12:26:25 PM

Shelf location where GT's was purchased



December 15, 2015 at 10:22:36 AM  
Temperature check of GT's products in refrigerated shelf



December 15, 2015 at 10:47:00 AM  
Above: Temperature check of samples during packaging



December 15, 2015 at 10:35:42 AM  
Above: Temperature check of samples before shipping



December 15, 2015 at 11:13:23 AM

GT's Gingerade sent for testing, December 15, 2015



December 15, 2015 at 11:12:37 AM  
GT's Original sent for testing December 15, 2015



December 15, 2015 at 11:34:17 AM  
Receipt of samples purchased for initial testing



January 11, 2016 at 12:01:17 PM

Temperature check of store refrigerator where GT's was purchased on January 11, 2016



January 11, 2016 at 12:00:43 PM  
Store shelf where GT's was purchased, January 11, 2016

GT's Gingerade sent to laboratory for testing



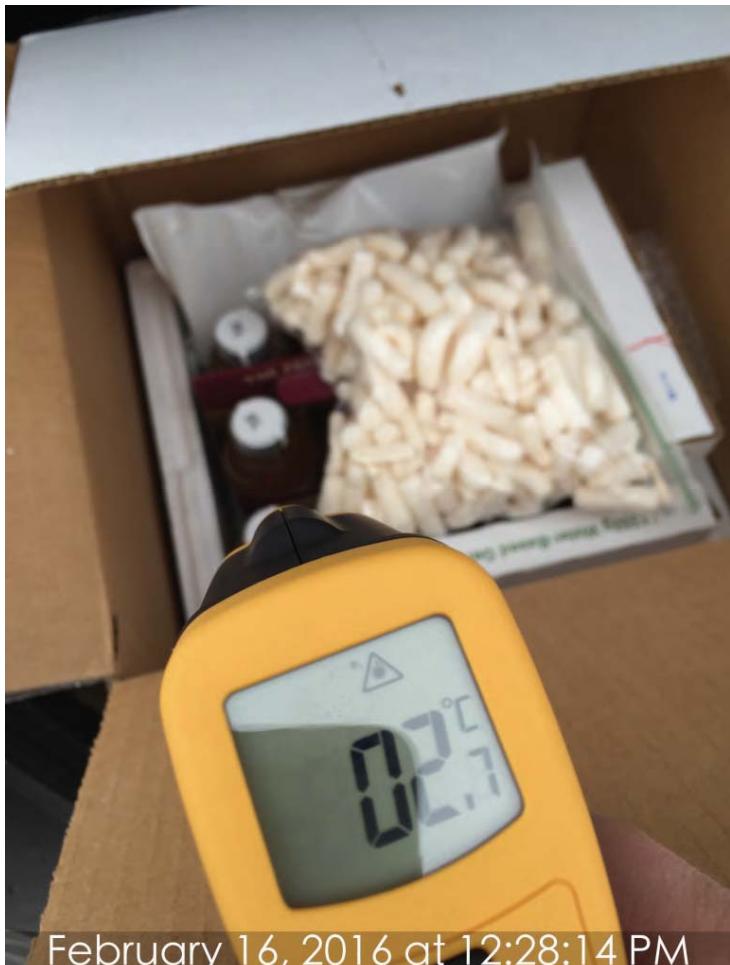
February 16, 2016 at 12:50:56 PM

Temperature check of refrigerator with samples for verification study



February 16, 2016 at 1:19:36 PM

Receipts of samples used for verification study



February 16, 2016 at 12:28:14 PM

Temperature check of shipper with samples ready for sending to lab



February 29, 2016 at 11:53:54 AM  
Temperature check of samples in cold storage



February 29, 2016 at 12:11:21 PM

GT's samples used for method verification



February 29, 2016 at 12:36:09 PM  
Temperature check of verification reference samples in cold storage



April 9, 2016 at 2:07:39 PM

Certified reference materials used in verification



April 9, 2016 at 2:06:30 PM

Certified beer reference materials used in method verification



Shelf of purchase for validation study materials



May 3, 2016 at 1:28:12 PM  
Shelf of purchase for validation study materials



May 3, 2016 at 1:55:31 PM

Temperature check of refrigerated storage fo study materials



Shelf of purchase for study materials, June 28, 2016



Shelf of purchase for study samples, June 28, 2016



June 28, 2016 at 9:10:16 PM

Temperature check of study samples to be shipped to lab, June 28, 2016



Temperature check (38.1 F) of store refrigerator where study materials were obtained, June 28, 2016



June 29, 2016 at 1:52:43 PM

GT Gingerade sent to lab for testing, June 29 2016



June 29, 2016 at 1:52:57 PM  
GT Gingerade sent to lab for testing, June 29 2016



June 29, 2016 at 1:44:50 PM

Temperature check of samples during summer, taken before shipping samples to laboratory



June 29, 2016 at 2:06:10 PM

GT Original sent to lab for testing, June 29 2016



June 29, 2016 at 2:06:19 PM

GT Original sent to lab for testing, June 29 2016

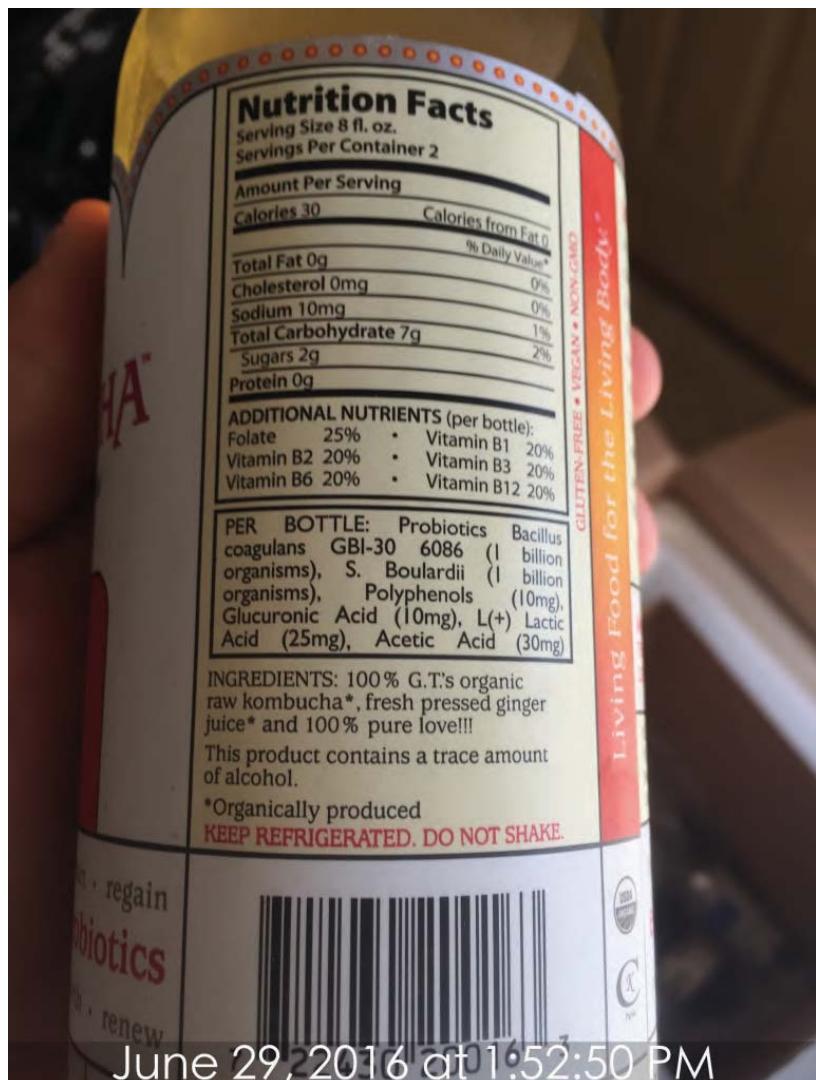


June 29, 2016 at 2:06:36 PM

GT Original sent to lab for testing, June 29 2016



June 29, 2016 at 1:54:01 PM



GT Original sent to lab for testing, June 29 2016



June 29, 2016 at 1:53:42 PM

GT Trilogy sent for testing June 29, 2016



July 13, 2016 at 3:06:39 PM  
Temperature check of retained samples in cold storage during summer

# EXHIBIT 4

## Blake Ebersole

C.V.

Blake Ebersole, B.S., M.B.A. is President of NaturPro Scientific LLC, a scientific and regulatory consulting firm offering a combined 30+ years of experience in the development and production of a wide range of natural products for foods and dietary supplements. Blake contributes to quality assurance and product development for firms of all sizes, and has managed supply chains for dietary ingredients meeting the most stringent quality requirements. Blake is a contributor to dietary supplement, food and cannabis industry regulatory efforts, and participates on a number of active committees and expert panels, including the American Herbal Products Association, ASTM International and AOAC International.

### **Professional Experience:**

#### **Quality Management:**

- Performed Good Manufacturing Practices audits for dozens of dietary supplement, food, ingredient and drug firms under 21 CFR 117, CFR 111 and CFR 211.
- Developed multiple “360-degree” Quality Management Systems (QMS) from scratch based on ISO 9000 and GMP standards meeting requirements of F50 food, supplement and pharmaceutical customers, leading to significant improvements in all quality KPI
- Led standards development and certification of overseas agricultural and botanical extract manufacturing operations in India under GMP (21 CFR 111), USDA Organic, Non-GMO Project, Good Agricultural Practices, Fairtrade programs
- Led development, optimization and validation of dozens of natural product analytical methods according to AOAC, USP, ICH, GLP and other compendia guidelines
- Audited in-house and independent analytical laboratories according to ISO 17025 requirements
- Supported industry effort to develop standardized specifications and defect action levels for dozens of ingredients

#### **Legal and Regulatory Affairs:**

- Serve on technical and expert review panels for standards-setting organizations AHPA, ASTM & AOAC International
- Corporate legal counsel liaison and lead expert on FDA DSHEA dietary supplement regulations including GMP, product safety, product labeling and claims substantiation
- Led intellectual property (patent and trademark) research, submission and licensing on 3+ patents, 10+ patent applications, 20+ trademarks and copyrights
- Led and coordinated regulatory document submissions, including IND, NDI, GRAS and product registrations to US FDA, EU (EFSA), Australia TGA, Health Canada, KFDA, Japan FOSHU
- Generated, reviewed and negotiated legal agreements such as confidentiality, research, supply, quality, licensing and MOU

#### **R&D and Product Development:**

- Directed a \$10+ million natural products research program, supporting study design and data analysis
- Coauthor/advisor on 100+ scientific studies: human clinical, preclinical, analytical chemistry and toxicology
- Inventor and/or executor on 10+ patents covering products with \$100+ million in sales
- Led manufacturing scale-up from concept to commercial scale for dozens of natural products
- Led licensing and product development on patented solid-lipid particle formulation (Longvida® Optimized Curcumin)
- Scientific liaison and research collaborator with numerous physicians and scientists across various disciplines

#### **Technical Sales and Marketing:**

- Lead brand strategy & management for 15+ proprietary branded products sold as ingredients and consumer products
- Sales lead for proprietary products to Fortune 500 and global customers, resulting in millions in revenue
- Authored or contributed to 60+ trade press articles
- Lead technical support for thousands of communications with press, scientist, physician, B2B and consumers

## Blake Ebersole

C.V.

- Generated marketing content; including sales sheets, website content, sales presentations, training sessions, webinars, press releases, and technical dossiers
- Lead marketing and sales strategy and manage projects for B2C start-ups; generate successful online content for B2C

### Medical Cannabis

- Currently serve on ASTM International D37, U.S. Hemp Roundtable and American Herbal Products Association (AHPA) Cannabis Committees
- Supported the development of operating standards and wrote standard operating procedures (SOP) for Good Manufacturing Practices (GMP) for cannabis standards-setting organization
- Currently serve as regulatory and quality assurance consultant for hemp industry and trade organizations
- Founding member of technical standards committee for U.S. Hemp Roundtable
- Coordinated initial R&D, production, quality assurance and regulatory affairs for a cannabis startup with operations in Washington, Colorado and Nevada
- Assisted in development of cannabis license applications in New York, Florida, California, Colorado and Louisiana
- Established analytical testing standards and guidelines for potency and purity of cannabis products
- Audited cannabis analytical laboratory data according to ISO 17025 standards
- Developed in-house formulas, materials lists, manufacturing processes, manufacturing records and operational guidelines for cannabis extract and finished product production
- Developed R&D for and commercial processes for small- and large-scale extraction and purification

### Leadership

- Serve as principal liaison to trade associations and standards-setting agencies such as AOAC, USP, AHPA and others
- Planned and implemented numerous corporate-level strategic and tactical plans, processes and policies that improved performance in research, quality, supply chain, sales/marketing, finance and legal departments
- Managed projects and budgets for research, marketing, legal and quality departments
- Department supervisor with 5+ direct reports, experienced in HR practices and requirements
- Led training sessions for corporate, sales/marketing and quality departments

### Diplomas:

**2010 Masters, Business Administration**

***Butler University***

Indianapolis, IN, USA

**2000 Bachelor of Science, Forensic Chemistry (ACS)**

***West Chester University***

West Chester, PA, USA

### Positions held:

2015-present	<b><i>President and Founder</i></b> , NaturPro Scientific LLC, Carmel, IN
2016-2017	<b><i>Contributing Writer</i></b> , <b><i>HerbClip</i></b> , American Botanical Council, Austin
2015-2017	<b><i>Co-Founder</i></b> , Identification of Dietary Ingredients (IDDI)
2014-2015	<b><i>NIH/NCCAM Grant Advisor</i></b> , "Botanicals and Drug Interactions", University of Rhode Island
2013	<b><i>International Association for Dental Research (IADR) Grant Co-investigator</i></b> : "Topical curcumin administration to gingival tissue as potential treatment for periodontal disease", Stony Brook University
2012-2018	<b><i>Contributing Writer</i></b> , <b><i>Natural Products Insider</i></b>
2012-2013	<b><i>Founder and Editor</i></b> , <b><i>VerdeMedica: Journal of Botanical Product Science and Quality</i></b>
2012-2015	<b><i>NIH Grant Advisor</i></b> , "Efficacy of <i>Withania somnifera</i> Compounds on Breast Cancer", Emory University

## Blake Ebersole

C.V.

2006-2015	<b>Technical Director</b> , Verdure Sciences, Noblesville, IN
2005-2006	<b>Marketing Coordinator</b> , Geni Herbs, Noblesville, IN
2002-2004	<b>Co-Founder</b> , www.RainbowLight.net, Etters, PA
2001-2002	<b>Teacher</b> , Honolulu School District, Hawai'i
2000	<b>Analytical Chemist</b> , Pennsylvania Equine Toxicology and Research Laboratory, West Chester, PA, USA

### Training & Honors:

- **FDA Foreign Supplier Verification Program**, FSPCA, 2018
- **FDA Preventive Controls Qualified Individual**, FSPCA, 2018
- **AOAC Expert Review Panel Award**, for Method Development of Ethanol in Kombucha, 2017
- **Supplement Industry Star Award**, *SupplySide West/Informa*, 2015 & 2016
- **Supply Chain Transparency Award**, *Nutraingredients-USA* for PLT360, 2016 (Client contracted)
- **Dietary Supplement Good Manufacturing Practices, 21 CFR 111**, American Herbal Products Association, 2010
- **Dietary Supplement Health Claim Substantiation**, American Herbal Products Association, 2006
- **Chemistry Seminar**, West Chester University, 2000: *Pharmacology and binding of ligands at the serotonin receptor*
- **Honors Merit Scholarship**, West Chester University, 1996-1997

### Professional Organizations and Committees:

- **AOAC International**, Professional Member, Expert Review Panel, Ethanol in Kombucha, 2015-present
- **International Society of Sports Nutrition**, Member, 2018
- **U.S. Hemp Roundtable**, Technical Committee, 2017-present
- **ASTM International**, D37 Committee Member, 2017-present
- **American Herbal Products Association**, Associate Member and Committee Member: Labs, Analytical Methods and Standards Committee, Cannabis Committee, 2015-present
- **Supplement Safety and Compliance Initiative**, Working Group Member, 2016-2017
- **State of Colorado Marijuana Enforcement Division**, Pesticides Testing Working Group, 2016-2017

### Peer-reviewed Publications:

1. Determination of ethanol content in kombucha products by gas chromatography with flame ionization detection: a multilaboratory study, Liu Y, Chan M, **Ebersole B**, Sy H, Brown PN. Journal of AOAC 2018 Sep 18 doi:10.5740/jaoacint.18-0190
2. Single laboratory validation of a GC-FID method for ethanol in kombucha, **Ebersole B**, Eckert M, Schmidt R, Chan M, Brown P. 2017 Journal of AOAC, doi: 10.5740/jaoacint.16-0404
3. Curcumin Has Mixed Effects on Oxidative Stress in Patients with Nonmetastatic Prostate Cancer following Radiation Therapy, **Ebersole B**. *HerbClips™*, American Botanical Council, September 2017
4. Aromatherapy Using Lavender Oil or Linalyl Acetate Modestly Improves Pain Relief in Patients with Colorectal Cancer following Post-surgery Catheter Removal, **Ebersole B**. *HerbClips™*, American Botanical Council, September 2017
5. Loquat Leaf Extract without Additional Exercise Does Not Increase Muscle Mass in Healthy Adults, **Ebersole B**. *HerbClips™*, American Botanical Council, August 2017
6. Meta-analysis Provides Update of Aromatherapy for Depression, **Ebersole B**. *HerbClips™*, American Botanical Council, August 2017
7. Petitgrain Oil Aromatherapy Reduces Markers of Stress and Modestly Improves Performance in Simulated Workplace Environment, **Ebersole B**. *HerbClips™*, American Botanical Council, August 2017

## Blake Ebersole

C.V.

8. Bromelain Improves Facial Swelling following Oral Surgery, **Ebersole B.** *HerbClips™*, American Botanical Council, July 2017
9. Single Serving of Montmorency Tart Cherry Concentrate Improves Cerebral Blood Flow, but Not Cognitive Function, **Ebersole B.** *HerbClips™*, American Botanical Council, August 2017
10. Kale Reduces Postprandial Spikes of Plasma Glucose in Healthy Japanese Adults, **Ebersole B.** *HerbClips™*, American Botanical Council, July 2017
11. A Two-week, Pilot Study on the Reduction of Irritable Bowel Syndrome Symptoms with Atrantil®, **Ebersole B.** *HerbClips™*, American Botanical Council, July 2017
12. Hibiscus Water Extract Demonstrates Significant Antioxidant Effects in Patients with Marfan Syndrome, **Ebersole B.** *HerbClips™*, American Botanical Council, June 2017
13. Weight Reduction with Meratrim® Botanical Extract Combination in Overweight Humans—A Randomized, Controlled Trial, **Ebersole B.** *HerbClips™*, American Botanical Council, June 2017
14. Standardized Cranberry Extract, Crancap™, Reduces Bacterial Adhesion in Patients with Recurrent Urinary Tract Infection, **Ebersole B.** *HerbClips™*, American Botanical Council, May 2017
15. Efficacy of a Fruit and Vegetable Powder Supplement for Menopausal Symptoms in Women, **Ebersole B.** *HerbClips™*, American Botanical Council, May 2017
16. Efficacy of Coenzyme Q10 and Tea Tree Oil for Chronic Periodontitis, **Ebersole B.** *HerbClips™*, American Botanical Council, May 2017
17. Standardized Ginger Extract May Reduce Adverse Events from Tuberculosis Drugs, **Ebersole B.** *HerbClips™*, American Botanical Council, April 2017
18. Review of Contact Dermatitis Associated with Tea Tree Oil Exposure, **Ebersole B.** *HerbClips™*, American Botanical Council, June 2017
19. Efficacy of a Diet Program on Body Weight in Overweight Americans: Open-Label Human Study. **Ebersole B.** March 2017. Technical Report, self-published on client website.
20. Pilot Studies on the Efficacy of a Diet Program on Body Weight in Overweight and Obese South Africans, **Ebersole B.** March 2017. Technical Report, self-published on client website.
21. Analysis of Sugars in Kombucha Tea by High Performance Liquid Chromatography, **Ebersole B.** Technical Report, October 2016. DOI: 10.13140/RG.2.2.24141.23522
22. **Ebersole B.**, Hingorani L. Stable solid lipid particle composition for improved bioavailability of lipophilic compounds for age-related diseases. PCT Application WO/2016/077454. Assigned.
23. AOAC International *First Action Official Method* 2016.12, Determination of Ethanol in Kombucha. **Ebersole B.**
24. AOAC Standard Method Performance Requirements 2016.001. *Journal of AOAC*, (2016) 99(4), 1120-1121
25. Bitter melon extract attenuating hepatic steatosis may be mediated by FGF21 and AMPK/Sirt1 signaling in mice. Yu Y, Zhang XH, **Ebersole B.**, Ribnicky D, Wang ZQ. *Scientific Reports (Nature)*. 2013 Nov 5;3:3142. doi: 10.1038/srep03142.
26. Optimization and validation of ursolic acid by HPLC in *Ocimum sanctum*. Shah J, Patel S, **Ebersole B.**, Hingorani L. *Planta Medica* 2012 DOI: 10.1055/s-0032-1321177
27. Acute human pharmacokinetics of a lipid-dissolved turmeric extract, Shah J, Patel S, **Ebersole B.**, Hingorani L. *Planta Medica* 2012 DOI: 10.1055/s-0032-1320664
28. Sustained cognitive effects and safety of HPLC-standardized *Bacopa monnieri* extract: A randomized, placebo controlled clinical trial. Hingorani L, Patel S, **Ebersole B.** *Planta Medica* 2012; DOI: 10.1055/s-0032-1320681

## Scientific Presentations:

1. Safety, tolerability and nutrient status after consuming a total meal replacement beverage for 30 days: a randomized, controlled pilot study in healthy adults. **Ebersole B.** *International Society for Sports Nutrition Annual Meeting*, June 7, 2018.
2. Single Laboratory Validation of Ethanol in Kombucha by Gas Chromatography with Flame Ionization Detection. **Ebersole, B.** *AOAC International Annual Meeting*, September 2016.
3. Ethanol analysis of kombucha products with gas chromatography. **Ebersole B.** *Institute of Food Technologists Annual Meeting*, 2016.

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4. Acute human pharmacokinetics of a lipid-dissolved turmeric extract. Shah J, Patel S, **Ebersole B**, Hingorani L. 2012 *International Congress on Natural Products Research*, New York, NY. July 31, 2012. Planta Med 2012; 78 - PH5 DOI: 10.1055/s-0032-1320664
5. High-throughput screening program for commercial single-herb extracts. Hingorani L, Seeram NP, **Ebersole B**. 2012 *International Congress on Natural Products Research*, New York, NY. July 31, 2012. Planta Med 2012; 78 - PF85 DOI: 10.1055/s-0032-1320632
6. Optimization and validation of ursolic acid by HPLC in *Ocimum sanctum*. Hingorani L, **Ebersole B**, Patel S. 2012 *International Congress on Natural Products Research*, New York, NY. July 31, 2012.
7. Orthogonal validation of analytical and quality systems for botanical products. Hingorani L, Patel S, Darji B, **Ebersole B**. 2012 *International Congress on Natural Products Research*, New York, NY. July 31, 2012. Planta Med 2012; 78 - PJ156 DOI: 10.1055/s-0032-1321316
8. Sustained cognitive effects and safety of HPLC-standardized *Bacopa monnieri* extract: a randomized, placebo-controlled trial. Hingorani L, Patel S, **Ebersole B**. 2012 *International Congress on Natural Products Research*, New York, NY. July 31, 2012.
9. Bitter melon extract enhances insulin sensitivity by modulating FGF21 signaling in high-fat diet fed mice. Wang ZQ, Yu Y, Zhang XH, Li H, Qin J, **Ebersole B**, Cefalu WT. 7<sup>th</sup> *International Conference for Functional Foods in the Prevention and Management of Metabolic Syndrome*, Southern Methodist University, Dallas, TX, USA, December 3-4, 2010.

### Invited Presentations:

1. "Current Issues for Food Analysis", Department of Nutrition and Food Science, Texas A&M University, October 25, 2017
2. "An Overview of the Food and Supplement Regulatory Climate", Department of Nutrition and Food Science, Texas A&M University, March 16, 2017
3. "Identity Testing and Method Validation for Botanicals", *Supplyside West*, October 5, 2016.
4. "Emerging Regulatory and Labeling Issues for Dietary Supplements and Foods", Department of Nutrition and Food Science, Texas A&M University, September 5, 2016.
5. "Natural Products Research for Neurodegenerative Diseases", NIH/NINDS, Bethesda, MD, March 3, 2015.
6. "Optimized Curcumin and the Aging Brain", Amway/Nutrilite, October 29, 2014.
7. "Curcumin Advancements: The Aging Brain with Longvida® Curcumin", Douglas Labs, April 23, 2014.
8. "Longvida: The Brain Curcumin". *Vitafoods International Conference*, Geneva, Switzerland, May 24, 2012.
9. "100% Ingredient Identity". *SupplySide Marketplace Good Manufacturing Practices Workshop*, NY, NY, May 8, 2012.
10. "Nutraceuticals: An Overview". Department of Nutrition and Food Science, Texas A&M University, April 6, 2012.
11. "Fortification of Polyphenols into Functional Foods". *Prepared Foods R&D Applications Seminar*, Chicago, IL, USA, August 3, 2011.
12. "Science-based Curcumin", 16<sup>th</sup> *International Food Ingredients and Additives (IFIA) Conference*, Tokyo Japan, May 19, 2011.
13. "Bioavailability of Botanical Supplements: Challenges and Opportunities". Department of Nutrition and Food Science, Texas A&M University, March 31, 2011.
14. "Foods Designed for Health, Functional Foods, and Nutraceuticals". Department of Nutrition and Food Science, Texas A&M University, March 20, 2008.
15. "Overview of Research-Validated Pomegranate: Focus on Prostate Health". *US Too Prostate Cancer Group Patient Education Symposium*, Chicago, IL, USA, November 2, 2007.
16. "Science-based Nutrition: Finding the Right Pomegranate". *US Too Prostate Cancer Group Regional Meeting*, Chicago, IL, USA, July 24, 2007.

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### Articles and Trade Publications:

1. A List of Scientific Publications on Natural Products, including Food, Medicine and Dietary Supplements, with a focus on Quality Management Systems, including Good Agricultural, Collection and Manufacturing Practices, Ebersole B. 2017, Self-published.
2. Historical Food and Supplement Adulterant List, Ebersole B. 2017, Self-published.
3. Press Release, "[Botanical Liaisons and NaturPro Scientific Complete Independent Authentication of Rhodiolife® Rhodiola rosea L. Ingredient](#)", October 2017
4. Article, "[Emerging Heart Health Ingredients](#)", *Natural Products Insider*, August 2017
5. Article, "[Making a Quilt from the Regulatory Patchwork](#)," *Natural Products Insider*, July 2017
6. Article, "[Create Claims with Confidence](#)", *Natural Products Insider*, June 2017
7. Article, "[New Research on Ingredients for Joint Pain](#)", *Natural Products Insider*, March 2017
8. Quoted in "[Kombucha Study Raises Sugar Content Questions](#)", BevNET, November 2016
9. Article, "[Beyond Non-GMO for Supplements](#)", *Natural Products Insider*, November 2016
10. Article, "[Two Identity Testing Requirements: References and Rigor](#)", *Natural Products Insider*, October 2016
11. Article, "[New Omega-3 Technologies Emerging](#)", *Natural Products Insider*, October 2016
12. Article, "[Probiotic Questions from the Gut](#)," *Natural Products Insider*, May/June 2016
13. Article, "[GNC, FDA Aim Alignment of U.S. with Global Standards](#)", *Natural Products Insider*, March 2016
14. Article, "[Modernization of the Supplement Industry](#)", *Natural Products Insider*, January 2016
15. Article, "[Eight Steps to Developing Research Relationships](#)", *Natural Products Insider*, December 2015
16. Article, "[Supplier Verification Key to New Rules](#)," *Natural Products Insider*, December 2015
17. Article, "[Where the Cannabis Market is Going](#)", *Natural Products Insider*, October 2015
18. Article, "[Dosing and Quality Obstacles to Cannabis Adoption](#)", *Supplement Perspectives*, October 2015
19. Article, "[Welcome to the Gut Jungle](#)", *Natural Products Insider*, August 2015
20. Article, "[How to Design a Clinical Study](#)", *Supplement Perspectives*, June 2015
21. Article, "[Best Way to My Heart? Through the Gut](#)", *Natural Products Insider*, June 2015
22. Article, "[Immunity and Inflammation: Inseparable](#)", *Supplement Perspectives*, June 2015
23. Article, "[Capsaicin and Cannabis: The Hot and Cool of Joint Care](#)", *Supplement Perspectives*, April 2015
24. Article, "[How to Create Natural Product IP](#)", *Supplement Perspectives*, March 19, 2015
25. Article, "[The Athlete's Frenemy: Inflammation](#)", *Supplement Perspectives*, February 2015
26. Article, "[Extracts: More than a Cup of Tea](#)", *Natural Products Insider*, February 2015
27. Article, "[Certifications are Fine, But...](#)", *Natural Products Insider*, January 2015
28. Article, "[Supplement Trends of 2014 and the Future](#)", *Natural Products Insider*, December 2014
29. Article, "[Traceability: What's the Point?](#)" *Natural Products Insider*, November 2014
30. Article, "[R&D: The Key Disciplines](#)", *Supplement Perspectives*, November 2014
31. Article, "[Dose Delivery: Oil into Water](#)", *Natural Products Insider*, August 2014
32. Article, "[Advances in Brain Health Research](#)", *Natural Products Insider*, July 2014
33. Article, "[Next-Gen Blood Sugar Management](#)", *Natural Products Insider*, June 2014
34. Article, "[Emerging Carotenoid Research](#)", *Natural Products Insider*, April 2014
35. Special Issue, "[Beyond Lutein](#)", *Natural Products Insider*, April 2014
36. Article, "[Sci-Fi, QC and Botanicals](#)", *Natural Products Insider*, March 2014
37. Article, "[Dose Delivery, Old & New](#)", *Natural Products Insider*, March 2014
38. Article, "[Beyond the Test Tube: Superfruit Science](#)", *Natural Products Insider*, Feb 2014
39. Article, "[Joint Health: Alternative Now Mainstream](#)", *Natural Products Insider*, Feb 2014
40. Article, "[Advancement Depends on Going Back to Basics](#)", *Natural Products Insider*, Dec 2013
41. Article, "[Consume Your Political News Frequently--and Calmly](#)", *Natural Products Insider*, November 2013
42. Article, "[The Eyes Are the Window to Our Health](#)", *Natural Products Insider*, October 2013
43. Article, "[Weighting to Lose](#)", *SupplySide Community*, October 2012
44. Article, "[Eyes Wide Open: Eye Health Supplements](#)", *Natural Products Insider*, August 2013
45. Article, "[The Gut-Brain Axis](#)", *Natural Products Insider*, August 2013
46. Article, "[Five Great Apps for Supplement Science](#)", *Natural Products Insider*, July 2013
47. Article, "[Scientific Validity Keys for Supplement GMPs](#)", *Natural Products Insider*, June 2013
48. Article, "[Ingredient Spotlight: Pomegranate](#)", *Nutritional Outlook*, May 2013

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49. Article, "[Sports Supplements: OK for Kids?](#)", *Natural Products Insider*, May 2013
50. Article, "[Your Trade Show Physical and Mental Health Checklist](#)", *Natural Products Insider*, April 2013
51. Article, "[Tips for Hiring the Right Contract Ingredient Manufacturer](#)", *Natural Products Insider*, March 2013
52. Article, "[Politics, Religion and Organic Farming](#)", *Natural Products Insider*, February 2013
53. Article, "[The Eyes Are the Window to.. Our Health](#)", *Natural Products Insider*, January 2013
54. Article, "[Silver Linings in Omega-3 Research](#)", *Natural Products Insider*, December 2012
55. Article, "[Why Antioxidants Are Useful](#)", *Natural Products Insider*, November 2012
56. Article, "[Weighting to Lose](#)", *Natural Products Insider*, October 2012
57. Article, "[The Bugs Are Taking Over](#)", *SupplySide Community*, September 2012
58. Quoted in "Encouraging Natural Bone Health", *Natural Practitioner*, July/August 2012
59. Quoted in "Boosting the Brain", *Nutrition Industry Executive*, July/August 2012
60. Article, "[The Research Says It All: Omegas Do a Body Good](#)", *SupplySide Community*, August 2012
61. Article, "[Ensuring Purity for Prenatal Supplements](#)", *SupplySide Community*, July 2012
62. Article, "[Are You in the 59 Percent?](#)", *SupplySide Community*, May 2012
63. Article, "[The Omnivore's Inflammatory Dilemma](#)", *SupplySide Community*, April 2012
64. Article, "[New Frontiers in Digestive Health](#)", *SupplySide Community*, March 2012
65. Article, "[Ch-ch changes in Senior Supplements](#)", *SupplySide Community*, February 2012

# EXHIBIT 5

**Verification of a Method for Measuring Ethanol in  
Kombucha by Gas Chromatography with Flame  
Ionization Detection**

*With Supplementary Data:*

**Round-Robin Study on Ethanol Content in  
Commercial Kombucha Samples and Certified  
Reference Materials**

**DRAFT REPORT, CONFIDENTIAL**

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Covance Study No. 8336-188

April 22, 2016

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## INTRODUCTION

Kombucha is often marketed as a non-alcoholic beverage, which, according to TTB regulations, requires that it contain an alcohol content of less than 0.50%. The objective of this study was to examine the potential of gas chromatography with flame ionization detection (GC-FID) as a standard method for quantifying ethanol content in kombucha. The Covance method “MP-ETME” commonly used for complex mixtures containing low levels of ethanol, including foods, beverages and botanical materials, was utilized in this study.

The commercial test sample selected was a ginger-flavored kombucha available in the U.S. which had been previously screened for alcohol content and suitability for such studies. Reference materials included pure ethanol, 1-propanol as internal standard, certified reference materials (ethanol-water and beer), and a control kombucha found to be of similar composition to the commercial kombucha samples. Spiked reference materials were produced by adding a known amount of ethanol to either water or the control kombucha.

The study was initiated on March 2016 and completed in April 2016. The laboratory selected to run the analysis was Covance Laboratories, Madison Wisconsin.

A preliminary investigation in which multiple laboratories assessed the ethanol content in a number of commercial and spiked samples, as well as certified reference materials (CRM) was also performed. Data from the multiple lab “round robin” investigation is provided as a Supplement to this report.

## CONCLUSIONS

Based on the analytical results obtained in this study, Covance method MP-ETME, which is also commonly used for foods, beverages and botanical materials, is appropriate for the quantification of ethanol in kombucha. The study method was found to be accurate and precise, meeting the Standard Method Performance Requirements (SMPR) established by the AOAC kombucha working group in 2015-2016.

In this study, no indication of interferences from co-eluting peaks or other interferences was observed.

The limit of detection and limit of quantitation for the method were 0.015% ABV, below the typical ethanol content of commercial kombucha products based on preliminary analyses. Method linearity was shown as represented by the correlation coefficient, r, of the calibration curve which was greater than 0.9996.

Using the Covance headspace GC-FID method, the commercial kombucha sample was found to contain 1.61% alcohol by volume (ABV) with a relative standard deviation of +/- 0.06%.

Method precision, measured by the relative standard deviation (RSD) across different days, instruments and technicians, was < 4%, meeting the AOAC method performance requirement of <6%.

Recovery for lab-spiked control kombucha samples ranged from 98.3 to 104.2% across spike levels of 0.13%, 1.3% and 3.3% ABV.

Recovery for lab-blinded Certified Reference Materials (CRM) was 101-104% for sealed CRM and 94-104% for both sealed and repackaged CRM, across spike levels of 0.1267%, 0.505% and 2.53% ABV.

## EXPERIMENTAL DESIGN AND RESULTS

### Results:

The study was conducted during March 2016. The method meets the draft AOAC SMPR (Version 4, December 9, 2015) for ethanol in kombucha. See figures. All data are presented in units of alcohol by volume (%ABV) under the definition in AOAC SMPR, unless otherwise specified.

### Methodology

The Covance headspace GC-FID method (method MP-ETME, Version 1, effective date: April 9, 2010) was verified in this study based on the AOAC Guidelines for Single Laboratory Validation of Chemical Methods for Dietary Supplements and Botanicals.

Briefly, samples are heated and agitated in a 20-mL headspace vial. A portion of the headspace is injected into a gas chromatograph (GC) with a flame ionization detector (FID) on a DB-WAXetr GC column. Quantitation is performed using a 6-point calibration curve generated by a weighted (1/concentration) least squares linear regression analysis.

### Apparatus:

- Analytical balance
- J&W DB-WAXetr column, 0.53 mm x 30 m, 2 $\mu$ m df
- Headspace vials and magnetic Teflon-lined caps, 20-mL
  - Screw-top vials (Restek, part # 23082)
  - Crimp top vials (Restek, part # 24685)
- Combi-PAL headspace autosampler
- Agilent 7890 GC system with flame ionization detector

### Headspace conditions:

- Incubation temperature: 80°C
- Syringe temperature: 85°C
- Heating time: 15-20 minutes

### Gas Chromatograph conditions

- Column: J&W DB-WAXetr
- Film thickness: 2 to 5 um
- Temperature: Initial 40°C for 10 minutes
- Rate: 25°C/minute to 240°C, hold 240°C for 1 minute
- Run Time: 20 minutes
- Detector: flame ionization
- Detector temperature: 250°C
- Injector temperature: 150°C
- Carrier gas: He, 7 mL/min

- Hydrogen flow: 40 mL/min
- Air flow: 400 mL/min
- Makeup flow: 40 mL/min
- Makeup gas: Nitrogen
- Injection volume: 2,000 uL

## SAMPLE MATERIALS

### Characterization

**Commercial Kombucha:** Based on preliminary analysis of commercial kombucha products, the test sample was selected as a commercial kombucha, which based on preliminary analysis, and visual, chemical and label appearances was considered to be representative of many other kombucha products on the market. The sample was representative of kombucha products containing ethanol, solid matter, organic acids and carbon dioxide. Spices and flavors containing essential oils, like ginger root (one of the most popular kombucha flavors), have also been purported to interfere with analysis of volatiles. Acetic acid has also been associated with interference of some alcohol methods. Therefore, a ginger-flavored kombucha with labeled amount of acetic acid, GT's Gingerade, was selected.

The composition of the sample was evaluated in a nutritional analysis (see below). Kombucha is generally stated as a fermented beverage containing water, tea, sugar, yeast and bacteria, organic acids (such as acetic and gluconic acids), dissolved carbon dioxide and ethanol.

### Verification Material:

The commercial kombucha sample was purchased from a grocery store in Carmel Indiana on February 16, 2016. The sample was transported under cold conditions to the laboratory using validated coolers and temperature monitors (TempTale 4, Sensitech).

Reference #	Identification	Lot Number	Purity	Stability	Storage
1	GT's Gingerade (Ginger flavor)	2621*C4B, Covance sample 4814442	"non- alcoholic", ethanol content not labeled, product previously tested to contain >1.0% ethanol	Tested on or before expiration date (March 25, 2016)	In a chamber set to maintain 5 ±3 deg C.

### Test sample stability

The commercial kombucha sample was kept under refrigerated temperatures in an unopened bottle with an intact manufacturer's seal, prior to testing before "expiration/best by" date. Preliminary studies on commercial spiked samples suggested that ethanol had acceptable recovery after spiking, handling and transportation (see Supplementary Data).

**Control Kombucha:** An ethanol-free reference sample of control kombucha was analyzed for nutritional composition. See below table.

Nutritional Composition (per 8 oz serving)	Label: GT's Gingerade	Result: GT's Gingerade	Result: Control Kombucha (Ref #3)
<b>Ethanol</b>	"This product contains a trace amount of ethanol."	1.61%	<0.015%
<b>Specific gravity (g/mL) @ 20C</b>	not listed	1.02%	1.00%
<b>Moisture (%)</b>	not listed	96.5	97.1
<b>Calories</b>	30	33	27
<b>Calories from Fat</b>	0	<2.4	<2.4
<b>Cholesterol (mg/g)</b>	0	<0.24	<0.24
<b>Carbohydrates (g)</b>	7	7.8	6.4
<b>Total Sugar (g)</b>	2	7.8	5.4
<b>Sucrose (g)</b>	not listed	0.5	5.4
<b>Glucose (g)</b>	not listed	2.8	<0.1%
<b>Fructose (g)</b>	not listed	4.5	<0.1%
<b>Protein (g)</b>	0	0.4	0.4
<b>Vitamin C (mg/g)</b>	not listed	<1.0	<1.0
<b>Vitamin A (IU/g)</b>	not listed	<1	<1
<b>Calcium (mg)</b>	not listed	1	20
<b>Iron (mg)</b>	not listed	<0.2	<0.2
<b>Sodium (mg)</b>	10	6	38
<b>Acetic acid (mg)</b>	15	608	1225
<b>Citric acid (mg)</b>	not listed	213	<118

## Storage, Processing and Transportation Conditions

### Commercial Kombucha:

1. Samples were purchased by NaturPro Scientific at grocery stores in Carmel, Indiana in February 2016.
2. All temperatures starting with the store shelf to lab storage were recorded with time-stamped photographs of infrared thermometer readings of samples.
3. After purchase, samples were transferred from refrigerator shelf to PolarTech validated insulated carton shipper with 1.5" thick refrigerant packs, and temperature monitors TempTale 4, Sensitech)
4. The shippers were sealed immediately after purchase and transported overnight by FedEx to the laboratory in a box marked "Please refrigerate upon receipt". Labs were notified of storage requirements before receiving.
5. The laboratory storage chamber was set to maintain  $5\pm3^\circ\text{C}$ .
6. During sample processing, the laboratory was requested to not permit samples to remain outside of refrigerated conditions for more than two hours.
7. During sample processing, kombucha materials were transferred based on weight, not volume, to account for dissolved gases.

## Reference Standard Materials:

### Standard preparation

See below table. The internal standard 1-propanol (Reference #2) was used as an internal standard, since it is commonly used for analysis of residual solvents like ethanol in food, beverages and biological fluids like blood. 1-Propanol was spiked into the commercial kombucha sample (Ref #1), and separately into the standard solution (Lab-grade water spiked with Ref #4) at the same concentration. The area response ratio of the ethanol to the 1-propanol was used to normalize changes in injection volumes or detector response over time.

Before preparation, commercial and control kombucha reference samples (#1 and 3) were allowed to warm to room temperature in ambient conditions before opening. The samples were then weighed and transferred to headspace vials or dilution glassware. Specific gravity was measured from a separate aliquot of the same sample.

To prepare spiked samples, pure ethanol was transferred volumetrically by the lab into a pre-weighed amount of kombucha reference sample.

Certified Reference Materials (Ref# 7, 8 and 9) were tested by the lab with the expected (certified) content blinded to the lab. Samples (intact glass ampoules) were received by NaturPro from the certifying agency (LGC, Cerilliant or NIST). Labels were removed from the ampoules and attached into the lab notebook. Unique identifier codes concealing the certifier code were assigned to the samples, to blind the laboratory to the expected amount.

### Standard stability

Calibration standards prepared by the lab from dilutions of ethanol in water for calibration were used on the date of preparation only, based on standard laboratory procedure. Stability of other reference standards was based

on manufacturer's COA or label information. Stability of non-lab spiked samples was not tested since all samples were kept refrigerated, and were tested within one week of preparation.

Preliminary studies on control and commercial kombucha samples (Ref #5 spiked into Ref #3, blinded by NaturPro) showed that ethanol had acceptable recovery after spiking, transportation and resampling into another container (See Supplementary Data).

### Reference Standard Materials:

The following reference materials were used in the study.

Reference #	Identification	Lot Number	Purity	Stability	Storage
2	1-Propanol, Sigma #34871	SHBF0634V	99.98%	July 2018	Not specified
3	Control Kombucha (KeVita Inc) (ethanol-free, non- carbonated)	01206-1, Covance sample 4814443	<0.015% ethanol. Total acids 1.15%, Brix 3.0, pH 3.0 as per manufacturer.	Not specified	In a chamber set to maintain 5 ±3 deg C.
4	Ethanol (Reference standard, absolute (200 proof), Sigma- Aldrich # 459836)	SHBG7349V	99.97%	Not specified	Closed original container, room temp
5	Ethanol (Reference standard, absolute (200 proof), Sigma- Aldrich # 459836)	SHBG4976V	>99.5%	Not specified	Closed original container, room temp
6	Ethanol-water Certified Reference Material, NIST # 2894	Not applicable	0.10084% ±0.00083% certified mass fraction	valid until 30 April 2023	Refrigerate (do not freeze)

7	Ethanol-water Certified Reference Material, Cerilliant E-031	FN06181501,	100 mg/dL, (0.1267% ABV @ 20C)	exp June 2020	Refrigerate (do not freeze)
8	Beer Certified Reference Material, LGC BCR-651	000149, 000150, 000189, 000191	0.505 +/- 0.006 % ABV	valid until April 1, 2017	Approx 4 deg C. Room temp before opening. Do not freeze.
9	Ethanol-water Certified Reference Material, NIST 2897a	Not applicable	2% nominal mass fraction (2.53% +/-		Refrigerate (do not freeze)

## Calculations

A calibration curve was generated based on the response ratio of ethanol and the internal standard. The level of ethanol in the matrix was determined by calculating the response ratio of ethanol to the internal standard, then back-calculating from the calibration curve the concentration of the alcohol in the headspace that was analyzed. Then, dividing that result by the sample mass and multiplying by the final volume gave the result in the sample as provided.

$$\text{Analyte (ug/g)} = C \times V / m$$

$$\text{Analyte (% ABV)} = \text{Analyte (ug/g)} \times SG(E) / SG(K) / 10,000$$

where:

C = concentration from calibration curve (ug/mL)

V = final volume (mL)

m = sample mass (g)

SG(E) = specific gravity of ethanol (0.789 @ 20°C)

SG(K) = specific gravity of kombucha (1.02 @ 20°C)

References certified by mass fraction were converted to % ABV using the specific gravity of ethanol at 20°C of 0.789 g/mL.

## System Suitability

## Quality Assurance

Blanks were injected after the standards at the beginning of the sequence to assess analyte carry-over within the instrument. Recovery samples were prepared on at least 10% of all samples in a batch by spiking a sample with a known volume of stock standard. Duplicates were run at the discretion of the analyst.

This work was performed in compliance with Covance standard operating procedures (SOPs) and general documentation requirements of ISO 17025. Although method validations do not fall under the scope of Good Laboratory Practice (GLPs), GLP's were used as guidance where necessary and practical. In many cases, this study sought to meet many of the testing validation requirements under GLP's and AOAC guidances.

## Acceptance criteria

90-110% recovery was required for this study, based on the limits specified in the AOAC SMPR. The minimum requirements for routine use of the method include three standard points with concentrations bracketing the expected sample concentration, and correlation coefficient greater than or equal to 0.99. In this study, calibration curves with at least six different concentrations (excluding the blank) were analyzed at the beginning of each validation analysis run except on Day 1, where calibration samples were evenly interspersed throughout the run.

## Method references

Anthony, Sutheimer and Sunshine, Acetaldehyde, Methanol and Ethanol Analysis by Headspace Gas Chromatography, Journal of Analytical Toxicology, Vol 4, Number 1, January 1980 43-45

AOAC Guidelines for Single Laboratory Validation of Chemical Methods for Dietary Supplements and Botanicals

AOAC Standard Method Performance Requirements, 2012

## Procedure and Results

Procedures followed many of the AOAC guidelines for single laboratory validation. Two different technicians on two different instruments on two different days evaluated the same sets of samples for precision, accuracy and reliability, as well as repeatability and reproducibility in a separate lab.

## Identity of Ethanol

The identity of the ethanol was confirmed. The retention time of reference standards agreed with method requirements, with ethanol eluting at approximately 8.5 minutes and 1-propanol eluting at 12.3 minutes.

## Specificity

Specificity was found to be acceptable based on the following.

- An injection of 1-propanol as internal standard (Ref #2) was run with every ethanol spike. Relative retention times and AUC between ethanol and 1-propanol remained stable during the study.
- Routine blanks were run on each day and after calibration runs to ensure no carryover.

- An ethanol-free control kombucha (Ref #3) was also analyzed for absence of ethanol, and lack of interference. On one run, three replicates of the control kombucha were analyzed by GC-FID and found to contain no detectable ethanol.

No interfering peaks were found in any of the analyses (See Figure 1, Chromatograms)

### **Limit of Detection (LOD)**

The LOD was defined as the concentration of the lowest working standard with a signal-to-noise ratio equal to or exceeding 10:1. Therefore, the LOD was determined to be 0.0150% ABV.

### **Limit of Quantitation (LOQ)**

The LOQ for this method was previously defined as 10 ppm. Since determining a LOD of 10ppm required a relatively higher sample mass, and the analytical range of interest for kombucha was 0.1-3% ABV. The LOQ was considered to be 0.0150% ABV for this study, the same as the LOD.

### **Linearity**

In this study, calibration curves with at least six different concentrations of ethanol (Reference #4) in aqueous (purified water) standards were analyzed at the beginning of each analysis run, with the exception of Day 1.

On Day 1, a single set of standards were interspersed evenly throughout the analytical run to control for potential replicate error. A minimum of two standard points at each concentration were analyzed for every run.

The linearity of the interspersed and consecutive standards had an acceptable linear regression ( $r > 0.9996$ ). The method was acceptable since the standard curve had a correlation coefficient ( $r$ ) of greater than or equal to 0.995 and the individual back-calculated standard concentrations were within  $\pm 15\%$  ( $\pm 20\%$  for LOQ) of nominal. All samples were diluted within the range of the standard curve. See Table 1 for results.

### **Precision**

Precision was determined by analyzing six replicates of one lot of GT's Gingerade commercial kombucha (Ref #1) over a minimum of two days, including one day with a second analyst on a different instrument using a different type of headspace vial (12 total replicates).

The method was considered acceptable since the mean concentration of each day had a relative standard deviation (RSD) of less than or equal to 4%. Method reproducibility for this method was below the 6% established under the AOAC SMPR's for ethanol in kombucha. See Table 2.

### **Accuracy**

Accuracy was determined by testing duplicates at each of three spike levels of pure ethanol (Reference #4) spiked into control kombucha (Reference #3) over three days (totaling 18 total replicates). The spike levels were 0.13, 1.3, and 3.3% ABV.

Percent recovery ranged from 98.3 to 104.2%. The accuracy was considered acceptable since the means of each spike level were between 90% to 110%. This method is accurate for the quantification of ethanol in kombucha at concentrations between 0.13 to 3.3% ABV. See Table 3.

## Change of vial type

Aside from different operators and instruments from Day 1 to Day 2, the only other difference in experimental conditions was the type of headspace vial used. The headspace vial is important in order to ensure proper partitioning into the headspace occurs with no leakage.

Screw cap vials used during routine testing were used on Day 1, and crimp cap vials were utilized on Day 2. The purpose of using different vials was to determine whether the type of headspace vial used led to any differences in results. No discernible differences in interday means was found, although the precision from using the crimp cap was lower than the precision using the screw cap.

## Certified Reference Material (CRM) evaluation

Although it was not required by the SLV protocol, testing of certified reference materials (ethanol-water, Ref #6) was initiated by the lab, and performed on Day 1 and Day 2. Percent recovery ranged from 97.1 to 99.2%. See Table 4.

Additional testing of CRM's (Reference #7, 8 and 9) was initiated by NaturPro Scientific (NP) to enable proper lab blinding of expected concentrations (See Table 5). NP sent five samples of each reference via priority overnight shipping according to the following plan: one unopened glass ampoule, and four additional 1mL vials that were relabeled in sequential order, and coded to conceal the certified concentration of ethanol. Resampling into vials was used to determine if an additional handling step impacted the accuracy of the method. After results were reported, the certified purity of the samples were reported by NP to the lab to contain 0.13% ABV (ethanol-water, Cerilliant), 0.505% ABV (beer, LGC) and 2.53% ABV (ethanol-water, NIST). References certified by mass fraction were converted to % ABV using the specific gravity of ethanol at 20 degrees Celsius of 0.789 g/mL.

Recovery of ethanol from all spiked samples was found to be acceptable. For the unopened ampoules, recovery was 101, 104, and 102% for Ref # 7, 8 and 9, respectively. Including only the resampled CRM's, the recovery and %RSD was 91% and 5% for Ref #8 and 94% and 4% for Ref #9. Including all CRM (unopened plus resampled) the recovery and %RSD was 94% and 7% for Ref #8 and 95% and 5% for Ref #9. These were all considered acceptable since average recovery was between 90 and 110% and % RSD values were roughly similar to those established by AOAC Method Performance Requirements

## Statistical evaluation

Quantitation was performed using a 6-point calibration curve generated by a weighted (1/concentration) least squares linear regression analysis. Other statistical tools used include percent recovery, standard deviation (SD), intraday percent relative SD (Repeatability RSD, (RSD(r)), and percent relative SD (Reproducibility RSD, RSD(R)).

## Control of bias

All samples were treated in a similar manner during analysis to minimize assay bias. All samples were stored and processed according to NaturPro instructions.

Blake Ebersole, President of NaturPro Scientific LLC, an independent consulting firm, designed and commissioned the study, purchased and transported samples, interpreted all results, and generated reports. No restrictions on data publication or other conflicts of interest exist. This study had financial support from KeVita Inc. NaturPro has no financial interest or ownership of KeVita or vice versa. KeVita had no influence on study execution, analysis or reporting.

## APPENDIX

**Table 1**  
**Linearity**

(From Calibration Curve Dilutions of Reference #3)

Day	Correlation Coefficient (r)
1	<b>0.999999</b>
2	<b>0.999967</b>
3	<b>0.999722</b>

**Table 2**  
**Precision (Reference #1, GT's Gingerade)**

Replicate	Results (%ABV)
	<b>Day 1</b>
1	1.5860
2	1.5885
3	1.5937
4	1.6154
5	1.5967
6	1.6102
Mean	1.60
SD	0.119
RSD(r) (%)	0.743
<b>Day 2</b>	
1	1.6830
2	1.6048
3	1.4589
4	1.6444
5	1.6345
6	1.7181
Mean	1.62
SD	0.0900
RSD(r) (%)	5.542
Overall Mean	1.61
Overall SD	0.0626
<b>Overall RSD</b>	
<b>RSD(R) (%)</b>	<b>3.888</b>

SD Standard deviation  
RSD Relative standard deviation  
RSD(r) Repeatability (same-day RSD)  
RSD(R) Reproducibility (intermediate RSD)

**Table 3**  
**Accuracy**  
(Spike recovery of Ref #4 into Ref #3)

Day	Results		
	0.13%	1.3%	3.3%
1	98.3	99.7	99.9
	99.9	99.5	99.1
2	99.7	99.5	98.4
	100.4	99.6	99.2
3	103.2	100.0	102.5
	96.2	104.2	103.4
Mean	99.6	100.4	100.4
<b>RSD(R) (%)</b>	<b>2.33</b>	<b>1.84</b>	<b>2.03</b>

**Table 4**  
**Recovery of Certified Reference Material (Reference #6)**  
 (Lab Unblinded to Certified Concentration)

Day	Percent Recovery)
1	98.0
	99.2
2	98.5
	97.1

**Table 5**  
**Recovery of Certified Reference Material (Reference #7, 8 and 9)**  
 (Lab Blinded to Certified Concentration)

Ethanol in Kombucha						
Recovery of Ethanol from Certified Reference Materials	April 2016					
Product	Composition	Lot#	Exp	Certified Concentration %ABV	Lab Result	Percent Recovery
<b>Certified Reference Material (Cerilliant E-031) 1.2mL Ampoule (Ref #7)</b>	Ethanol-water	FN06181501 (Internal code ending in 06181501)	June 2020	<b>0.1267% +/- 0.0011%</b>	0.131, 0.127, 0.129, 0.127, 0.126% ABV	<b>101%</b>
<b>Certified Reference Material (LGC BCR-651) 10mL Ampoule (Ref #8)</b>	Beer	000149, 000150, 000189 (Internal code B1-B5)	April 1, 2017	<b>0.505% +/- 0.006%</b>	0.526, 0.455, 0.490, 0.439, 0.463% ABV	<b>104%*</b>

<b>Certified Reference Material (NIST 2897a) 10mL Ampoule (Ref #9)</b>	Ethanol-water	Not specified (Internal code E1-E5)	April 30, 2025	<b>2.53% +/- 0.057%</b>	2.59, 2.34, 2.50, 2.29, 2.34% ABV	<b>102%*</b>
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\*Recovery of unopened ampoule. Including resampled vials, Ref #8 recovery was 94% (range 87-104%) and Ref #9 recovery was 95% (range 90-102%)

## APPENDIX

### PROTOCOL DEVIATION

<b>Protocol</b>	<b>Actual Procedure</b>
<p><b>EXPERIMENTAL DESIGN.</b></p> <p><b>Linearity.</b> The Linearity section of the protocol requires that a standard curve with at least six different concentrations be analyzed at the beginning of each analysis run.</p>	The linearity determination on Day 1 was interspersed throughout the analytical run, and not run simultaneously to control for replicate bias.

This deviation supports the integrity or quality of the study.

### DISPOSITION OF TEST SAMPLES

Remaining unused test samples, matrices, or reference standards may be kept as retained samples under proper storage conditions by Covance or NaturPro.

### RECORD RETENTION

The raw data, including documentation, study protocol, final report, and study correspondence, resulting from this study will be retained in the Covance archives for at least 1 year from the date of report finalization.

## Supplementary Data

### **Multi-Lab Study on Ethanol Content in Commercial Kombucha Samples and Certified Reference Materials**

#### **Introduction**

A multi-lab study was performed prior to and after method verification of a GC-FID method commonly used for food, beverages and drugs. The study, conducted between December 2015 and April 2016, tested various types of materials (commercial kombucha products, ‘placebo’ control kombucha reference materials spiked with ethanol, and certified reference materials (CRM)).

In this study, 11 lots of commercial kombucha were tested at a total of four laboratories totaling 74 analytical runs. Laboratory #1 tested each sample in duplicate, and Lab #2 and #3 tested each sample once. Lab #4, running NIR alcoholizer and distillation, tested some samples. See data in Table 2 in this Supplementary Data section.

The study was initiated in response to regulatory compliance concerns raised by the kombucha industry and regulators regarding observed alcohol levels above the legal limit, in addition to differences in lab results for ethanol content. Although published validated methods relevant specifically to kombucha are absent, several methods are commonly used based on gas chromatography (GC).

Kombucha tea products contain a number of constituents common with other fermented products, but there are some differences in composition. Many kombucha products claim to contain living micro-organisms called SCOPY (symbiotic community of bacteria and yeast) which appears as solids, part settled sediment and part floating mass (known as the ‘mushroom’). In these products, ethanol, carbon dioxide and organic acids are produced and consumed by the SCOPY during fermentation that can continue after bottling. Other ingredients typically found in kombucha include tea (*Camellia spp*), sugars, plant extracts and flavors.

Same-sample results from NIR, distillation and GC-FID suggested a general agreement of the quantifiable ethanol across methods and labs (See Table 2 under Supplementary Data). NIR and distillation could become valid screening or field tests for kombucha products, especially those containing higher amounts of alcohol.

Testing of Certified Reference Materials found recovery for the method used by Lab #1 to be within the AOAC SMPR requirements of 90-110%. Recovery of ethanol in spiked samples was also determined to be within acceptable ranges for the GC-FID method used by Lab #2.

## Objectives:

NaturPro Scientific, LLC (NPS) independently conducted this study, mainly as a preliminary survey of analytical laboratories offering ethanol testing for kombucha. This study was done in advance of laboratory selection for single laboratory validation (SLV) for the quantification of ethanol in kombucha in units of alcohol by volume (% ABV). The following were key objectives of the preliminary study:

- To determine to a preliminary extent whether acceptable precision on same-sample duplicates was reported by labs
- To determine to a preliminary extent if ethanol concentrations above the legal limit of 0.5% ABV in commercial products previously reported by kombucha manufacturers and labs could be independently replicated.
- To determine to a preliminary extent whether further method optimization may be required before performing validation; and to determine an appropriate analytical range for the validation.
- To determine to a preliminary extent whether there may be general agreement in results on the same samples tested by different labs and methods.

After an initial round of testing done in December 2015 to January 2016, spiking studies were conducted in March 2016 to determine whether laboratories were able to accurately recover known amounts of pure ethanol that was added to both commercial kombucha and ethanol-free control kombucha materials at concentrations across the analytical range of kombucha products, generally 0.1 to 3% ABV.

to a preliminary extent.

## Methods:

### Preliminary study

Analytical methods for ethanol quantification were reviewed. Specifically, GC-FID was considered generally robust and appropriate. GC-MS was also selected due to its ability to measure ethanol and use in environmental monitoring. Lab selection for testing of commercial materials was based on an initial survey of laboratories offering kombucha ethanol testing.

Analysis of test and control samples were conducted by the select labs using multiple methods. With the exception of the spiked samples, all samples were purchased and sent in unopened bottles with original seals. All samples were tested before their expiration date. All samples were purchased, transported and stored in cold conditions using validated cold-transport shippers (Polartech). A temperature monitor (TempTale 4, Sensitech) recorded changes in temperature during shipping. All samples were sent overnight and received by the lab the following day. Temperatures of samples did not exceed general limits set for cold storage of refrigerated/perishable samples. A list of samples is found in Table 2 (Supp).

The headspace GC-FID method used by Laboratory #1 (Covance, Madison, WI) is detailed in the section previous to this section. A GC-MS method used by Covance was also employed.

The GC-FID method used by Laboratory #2 (ETS Laboratories, St. Helena, CA) is commonly used for testing alcohol in beer, wine and vinegar. The laboratory references AOAC 983.13, Final Action 1988, JAOAC 66, 1152 (1983). The reference standard cited is 99.5% ACS reagent grade (Sigma).

The GC-MS method used by Laboratory #3 (Cornerstone Laboratories, Memphis, TN) is used for EPA testing of a panel of hazardous waste contaminants at trace levels, including ethanol. The laboratory references the

following methods: EPA Headspace Method 5030B, EPA Method 624 Purgeables, Part 136, Title 40 and EPA Method 8260B, SW-846.

Lab #	Instrument	Method Reference
1 (Covance)	GC-FID Headspace and GC-MS Headspace	MP-ETME (Anthony et al JAT 1980, AOAC , GC-FID); RESO (GC-MS)
2 (ETS)	GC-FID Headspace	AOAC 983.13 (GC-FID)
3 (Cornerstone)	GC-MS Headspace	EPA 624 Part 136, Title 40, EPA 8260B, SW-846
4 (BDAS)	Distillation and NIR	Traditional; TTB

## Data Analysis

Appropriate statistical analysis were conducted with Microsoft Excel to include mean and relative standard deviation. All labs reported results in % alcohol by volume (ABV) except for Lab #1 reporting in ABW. For this lab, ABW was converted to ABV assuming a specific gravity of 1.00 g/mL across all products, based on measured range of specific gravity of 1.00-1.02 g/mL at 20° Celsius measured for various kombucha products. With respect to the overall findings, small potential variations in specific gravity did not impact overall results

## Data Management

All reports of raw data are on file and available on request.

### Materials selection:

Materials were selected from an initial survey of six retail locations in Carmel, Indiana. Multiple flavors from multiple manufacturers were selected.

### Commercial Kombucha Handling Precautions:

1. Samples purchased by NaturPro at grocery stores in Carmel, Indiana in December 2015 to March 2016
2. All temperatures starting with the store shelf to lab storage were recorded with time-stamped photographs of infrared thermometer readings of samples
3. After purchase, samples were transferred from refrigerator shelf to PolarTech validated insulated carton shipper with 1.5" thick refrigerant packs, and temperature monitors TempTale 4, Sensitech)
4. The shippers were sealed immediately after purchase and transported overnight by FedEx to the laboratory in a box marked "Please refrigerate upon receipt". Labs were notified of storage requirements before receiving.
5. The laboratory storage chamber was set to maintain 5±3deg C.
6. During sample processing, the laboratory was requested to not permit samples to remain outside of refrigerated conditions for more than two hours.

7. During sample processing, kombucha materials were transferred based on weight, not volume, to account for dissolved gases.

Samples were shipped via priority overnight with instructions to refrigerate samples (do not freeze).

### Reference Standard Materials:

The following reference samples were used in the study:

Reference #	Identification	Lot Number	Purity	Stability	Storage
2	1-Propanol, Sigma #34871	SHBF0634V	99.98%	July 2018	Not specified
3	Control Kombucha (KeVitaInc) (ethanol-free, non- carbonated)	01206-1, Covance sample 4814443	<0.015% ethanol. Total acids 1.15%, Brix 3.0, pH 3.0 as per manufacturer.	Not specified	In a chamber set to maintain 5 ±3 deg C.
4	Ethanol (Reference standard, 200 proof, Sigma- Aldrich # 459836)	SHBG7349V	99.97%	Not specified	Closed original container, room temp
5	Ethanol (Reference standard, 200 proof, Sigma- Aldrich # 459836)	SHBG4976V	>99.5%	Not specified	Closed original container, room temp
6	Ethanol-water Certified Reference Material, NIST # 2894	—	0.10084% ±0.00083% certified mass fraction	valid until 30 April 2023	Refrigerate (do not freeze)
7	Ethanol-water Certified Reference Material, Cerilliant E- 031	FN06181501,	100 mg/dL, (0.1267% ABV @ 20C)	exp June 2020	Refrigerate (do not freeze)

8	Beer Certified Reference Material, LGC BCR-651	000149, 000150, 000189, 000191	0.505 +/- 0.006 % ABV	valid until April 1, 2017	Approx 4 deg C. Room temp before opening. Do not freeze.
9	Ethanol-water Certified Reference Material, NIST 2897a	—	2% nominal mass fraction (2.53% +/-		Refrigerate (do not freeze)

### Spiked Reference Materials

A composite of three lots of ginger-flavored kombucha (same product used for the SLV) expiring within the same two days (March 25-26) was removed from refrigeration and immediately inverted gently 10 times to disperse solids, allowed to settle for a few seconds, and then opened. The compositing procedure was intended to correct for intermediate manufacturing and storage differences that might be expected to cause differences among same-product composition. Equal amounts of each bottle were slowly poured into a 1000mL glass beaker which was gently swirled to mix. Then, 100mL kombucha was slowly drawn into a 100mL volumetric pipet (Wilmad). Spiked samples of 0, 250 and 500 microliters of ethanol (200 proof, Sigma (Ref#4) was slowly dispensed into each beaker using ScilogixMicropette certified accurate within the nearest 0.23%. These samples were gently swirled for ten seconds, and then each poured into 15mL glass vials with screw cap foil seals. The samples were then immediately stored in the refrigerator.

A control kombucha (Ref #3) confirmed ethanol-free (<0.015% ABV) donated by KeVita Inc. was spiked with 0, 500 and 1500 microliters of ethanol per 100mL kombucha, using the same method just described.

### Certified Reference Material testing

Testing of CRM's (Reference #7, 8 and 9) was performed. For Reference #7, five unopened glass vials containing 0.1267 +/- 0.0011% ABV (certified by Cerilliant) were sent to each lab.

For References #8 and #9, five samples of each reference (except four for Lab #2) were prepared according to the following plan: one unopened glass ampoule, and an additional ampoule opened at room temperature and immediately poured into four 1mL amber glass vials and sealed with standard screw caps.

All samples were relabeled in sequential order with codes (E1-E5, B1-B5) to conceal the certified expected value of ethanol. All vials were filled approximately 4mm from the lip of the vial, to allow for some headspace. The transfer into new vials, the relatively small (~1mL) sample size, and the headspace were added as potential confounders to results. This resampling procedure was intended to determine whether transfer to another container before shipping resulted in recoveries different than for the unopened ampoule.

Samples were shipped via priority overnight with instructions to refrigerate samples (do not freeze).

### Results

## Certified Reference Material (CRM) Evaluation

Testing of Certified Reference Materials found method recovery from Covance (Lab #1) to be within the requirements of 90-110%.

Additional testing of CRM's (Reference #7, 8 and 9) at three labs, including the verification lab, was initiated by NaturPro (See Table 1 (Supp)). NaturPro sent five samples of each reference to Lab #1 and #3, and four to Lab #2 via priority overnight shipping according to the following plan: one unopened glass ampoule, and four (or three for Lab #2) additional 1mL vials. All samples were relabeled in sequential order and coded to conceal the certified concentration of ethanol. Resampling into vials was performed to determine if an additional sample transfer step impacted the accuracy of the method.

After results were reported, the certified purity of the samples were reported by NaturPro to the labs to contain 0.13% ABV (ethanol-water, Cerilliant), 0.505% ABV (beer, LGC) and 2.53% ABV (ethanol-water, NIST). (References certified by mass fraction were converted to % ABV using the specific gravity of ethanol at 20° Celsius of 0.789 g/mL.)

All recovery values for the CRMs were found to be within acceptable ranges. For Lab #1, the recovery from unopened ampoules was 101, 104, and 102% for Ref # 7, 8 and 9, respectively. The recovery and %RSD of only resampled CRMs was 91% and 5% for Ref #8 and 94% and 4% for Ref #9. Recovery and %RSD of all CRM (unopened and resampled) was 94% and 7% for Ref #8 and 95% and 5% for Ref #9. These were all considered acceptable since average recovery was between 90 and 110%, and % RSD values were roughly similar to those established by AOAC Method Performance Requirements.

Lab #2 reported 0.11, 0.11, 0.11, 0.11, and 0.11% on unopened ampoules of Ref #7, certified to contain 0.127% ABV. Due to the reporting of the same replicated value to two significant figures, no statistical analysis was done. Including all of the same CRM (unopened plus resampled) the recovery and %RSD was 93% and 2% for Ref #8 and 98% and 2% for Ref #9. These were all considered acceptable since average recovery was between 90 and 110%, and % RSD values were below those established by AOAC SMPR.

Lab #3 reported an average recovery of 96% with an RSD of 9% for Ref #7. Lab #3 reported a wide range of conflicting values for certified references Ref# 8 and Ref #9 which was not resolved with retesting. The results for these samples is not contained in this report.

**Table 1 (Supp). Recovery of Certified Reference Material**  
(Reference #7, 8 and 9) with Labs Blinded to Certified Concentration

Product	Composition	Lot#	Expiry Date	Certified %ABV	Lab #1 (GC-FID) (Validated method)	Lab #2 (GC-FID)	Lab #3 (GC-MS)
Certified Reference Material (Cerilliant E-031) Ampoule	Ethanol-water	FN06181501	June 2020	0.126 7%+/-	0.131, 0.127, 0.129, 0.001 1%	0.11, 0.11, 0.11, 0.127, 0.126%	0.120, 0.140, 0.120, 0.115, 0.115%

Certified Reference Material (LGC BCR-651) Ampoule	Beer	000149, 000150, 000189, 000191	April 1, 2017	<b>0.505</b> % +/- 0.006 %	0.526, 0.455, 0.490, 0.439, 0.463%	0.48, 0.47, 0.47, 0.46 %	FAIL
Certified Reference Material (NIST 2897a) Ampoule	Ethanol-water	Not specified	April 30, 2025	<b>2.53</b> % +/- 0.057 %	2.59, 2.34, 2.50, 2.29, 2.34%	2.53, 2.45, 2.53, 2.49%	FAIL

## Commercial Sample Evaluation and Spiking Studies

### Laboratory selection for SLV

See Table 2 in Supplementary Data (below). Results reported by Lab #1 using GC-FID method MP-ETME on duplicates of commercial samples indicated a high precision. Acceptable recovery of spiked ‘control’ kombucha samples indicate accuracy of the method. Based on these initial indicators of reliability, the lab’s routine use of this method for the past several years, and previous verifications conducted with this method on other matrices, this method and lab was selected to undergo further study of the method without further optimization required.

### Estimated content of commercial samples

Several samples of commercial kombucha samples tested contained greater than 1% alcohol by volume (ABV), consistent with previous laboratory and manufacturer reports. The ethanol content of commercial kombucha samples reported using the GC-FID method was 0.114% to 1.46% ABV. All samples were confirmed to meet all storage requirements, specifically cold chain control throughout the sampling process. All samples were tested before the expiration date marked on the bottle.

### Inter-lab agreement on same-lot samples

Lab #1 running GC-FID and GC-MS, and Lab #2 running GC-FID reported generally consistent results on same-lot samples. On control kombucha spike recovery samples, Lab #1 and #2 both using GC-FID reported acceptable recoveries. Lab #3 recovered levels lower than the expected amount in spiked reference samples, and did not recover the certified amount of ethanol in the samples. Therefore, data from lab #3 is not reported here.

**Table 2 (Supp). Analysis and Recovery of Ethanol from Commercial and Reference Materials**  
(Reference #7, 8 and 9) with Labs Blinded to Certified Concentration

Ethanol in Kombucha								
Results from Pre-validation Study				Mar 1	Dec 15	Dec 15	Mar 1	Jan 11

Product	Lot#	Expiry/B est by	Expecte d Value from Spike	Lab #1 (GC- FID)	Lab #1 (GC- FID)	Lab #1 (GC- MS)	Lab #2 (GC- FID)	Lab #4 NIR Alco holiz er	Lab #4 Distill ation
GT Gingerade	1831**BBB	1/17/16	NA		1.45, 1.46%	1.42%, 1.38			
GT Original	2230**D2B	1/20/16	NA		1.34, 1.36%	1.41%, 1.45%			
GT Citrus	1831**B7B	1/17/16	NA					1.36%	1.27%
GT Trilogy	0232C*A7B	1/31/16	NA					1.51%	
Commercial kombucha	5/23/16-8	5/23/16	NA						
Commercial kombucha	5370606	4/30/16	NA		1.23, 1.21%	1.21, 1.19%			
Commercial kombucha	FEB2016L1 12	2/1/16	NA					0.11%	0.08%
Commercial kombucha	MAR2716E 306	3/27/16	NA		0.263, 0.253%	0.275, 0.271%			
Commercial kombucha	APR2016 L351	4/20/16	NA		0.236, 0.232%	0.251, 0.244%			
Commercial kombucha	2621**C4B	3/25/16	NA	<b>1.61%</b>				1.44%	
Spiked Commercial kombucha*	02292B	3/25/2016		<b>1.432%</b>				1.37%	
Spiked Commercial kombucha	02292A	3/25/2016	1.68%*	<b>1.658%</b>				1.61%	
Spiked Commercial kombucha	02292C	3/25/2016	1.93%*	<b>1.922%</b>				1.86%	
Control (ethanol- free kombucha)	02291A	NA	0%	<b>&lt;0.015</b> %				<0.05 %	
Control (ethanol- free kombucha)	02291C	NA	0.500%	<b>0.692%</b>					
Control (ethanol- free kombucha)	02291B	NA	1.500%	<b>1.47%</b>				1.43%	

\*Baseline for spike addition of 0.250 or 0.500% to the unspiked sample, Lot 02292B (1.432%)  
Data points combined in the same cell are split duplicated of the same sample.

Blank cells = not tested

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# **Analysis of Sugars in Kombucha Tea by High Performance Liquid Chromatography**

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October 31, 2016

## INTRODUCTION

Kombucha is defined as a beverage resulting from the fermentation of tea (*Camellia sinensis*) leaves, sugar and other ingredients. The kombucha fermentation culture is known as SCOBY, short for “symbiotic culture of bacteria and yeast”. During fermentation, sugar is consumed by the culture, which produces ethanol, organic acids and carbon dioxide.

During a previous study which analyzed the ethanol content of various kombucha products, the sugar content was found to be higher than the expected value listed on the product label. This study was conducted to determine to a preliminary extent the amount of total sugars in kombucha products commonly sold by retailers in the U.S.

## METHODS

In the study, 88 bottles of commercial kombucha from eight manufacturers were tested using established HPLC methods for total sugars in foods.

Laboratory	Method Cited	Number of Samples
1	AOAC 982.14	59
2	AOAC 980.13	26
3	AOAC 977.20	3
	TOTAL	88

HPLC methods were selected that were referenced to AOAC Official Methods commonly used for complex food mixtures. For all methods, total sugars were calculated as the sum of glucose, fructose, sucrose, lactose and maltose. Three nutritional chemistry laboratories in the U.S. owned by firms with total estimated market cap of \$45 billion were used for the analysis. Laboratories were selected based on expertise with food analysis and participation in developing standard methods for sugars in foods and beverages. Multiple laboratories were employed in order to determine potential differences between labs.

Methods were selected from Official Methods of Analysis from AOAC International. The primary differences among the methods were the extraction and filtration steps used to remove potential interferences such as fats, fiber and proteins. AOAC 982.14 was developed for analysis of sugars in pre-sweetened cereals, and includes extraction and filtration steps. AOAC 977.20 is intended for separation of sugars in honey, and includes only filtration of the sample prior to analysis. AOAC 980.13 is intended for the analysis of sugars in milk chocolate, and also involves extraction and filtration steps to remove potential interferences. All labs were blinded to each other's methods and results prior to analysis.

Sugar alcohols were also screened in manufacturer products using USDA and AOAC methods.

Materials selection was based on an informal survey of manufacturers and products available at regional or national chain retailers in Carmel, Indiana. Products which contained higher levels of sugars than expected in the first round of testing were selected to undergo additional testing at multiple laboratories. The products studied in the additional testing were obtained from different retail locations in Indiana, California, Colorado, Pennsylvania and Florida within 100 miles of a major metropolitan area. One objective of materials and laboratory selection was to minimize the possibility that differences among laboratory test methods or retailer distribution and storage practices could impact study findings.

All samples were purchased and tested before the expiration date listed on product labels. All samples were verified to be purchased and stored under refrigerated conditions from time of purchase, with the manufacturer's seal kept intact until broken by the laboratory. Laboratories were instructed to store all samples under refrigeration. During sample processing, the laboratory was requested to not permit samples to remain outside of refrigerated conditions for more than two hours.

Data shown is presented in grams of total sugars per 8 fl. oz serving. The serving size of all products tested was 8 fl. oz.

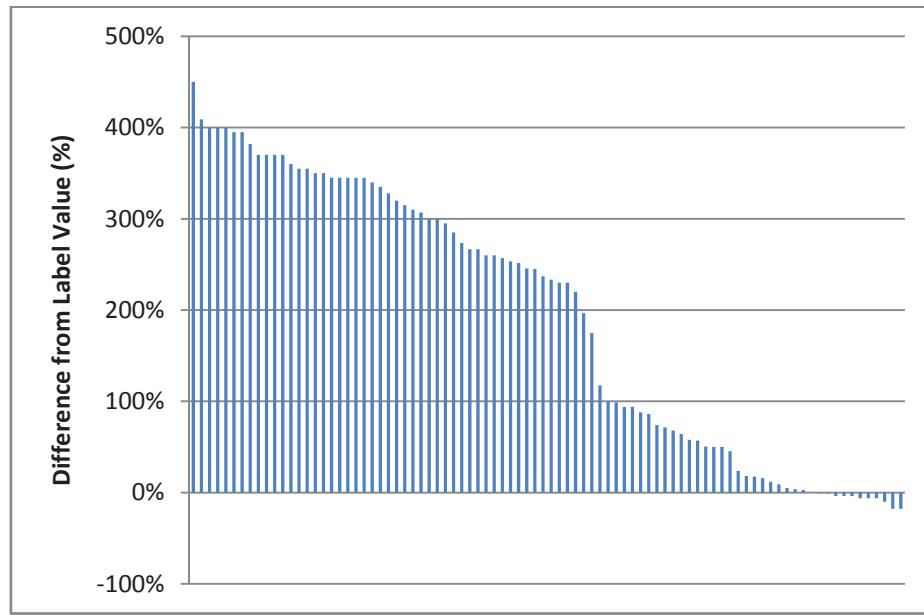
Statistical analysis (mean, standard deviation and Wilcoxon signed-rank test (two-tailed)) were performed using Microsoft Excel and NCSS 11. Expected values for each product were taken as the label claim for sugars listed in the Nutrition Facts panel. Where applicable, the study criteria for meeting the expected value included a tolerance no greater than 20% above label claim. Data from two samples from two additional manufacturers is listed in the data table, but was excluded from manufacturer-specific statistical analysis (Tables 1 and 2) due to n=1 for each.

Sugars were reported by laboratories in percentage values or grams per 8 oz. serving. All laboratory results are reported with the same number of significant figures listed in laboratory reports. Original laboratory reports are available on request.

## RESULTS

All sample handling instructions were confirmed by the laboratories, and all analyses were confirmed to meet laboratory system suitability requirements.

The range of differences for laboratory values was between -18% and 450% greater than the expected values listed on the product label (See Data Table in Appendix). Products from five out of eight manufacturers contained higher levels of sugars than expected, with products from two manufacturers containing an average of 291% and 311% more sugars than the expected value (Table 1).



**Figure 1. Distribution of difference between expected and laboratory value for total sugars in 88 commercial kombucha samples.** Percent difference was calculated for each sample for laboratory value over the expected value. Each bar on x-axis represents one sample.

Laboratory values were compared to expected values after grouping by manufacturer (Table 1). For all manufacturers, a range of 6.7-13.0 grams of sugars per serving was found. Samples made by Manufacturers A and B had the largest discrepancies, with sugar content 311% and 291% higher than the expected value, respectively.

Manufacturer (sample size)	Expected Value		Laboratory Value			Mean % Above Expected	p-value
	Mean	S.D.	Mean	S.D.	Range		
A (31)	2.3	0.7	8.8	1.0	6.7-11	311%	<0.001
B (21)	2.4	0.5	9.3	1.3	6.9-11	291%	<0.001
C (11)	7.3	0.6	9.9	1.7	7.8-12	37%	0.004
D (9)	8.0	0	7.7	0.3	7.2-8.3	-4%	0.03
E (3)	9.0	0	7.9	0.9	7.4-8.9	-12%	0.17
F (5)	5.0	0.0	8.4	0.9	7.5-9.4	68%	0.06
G (4)	4.2	1.5	9.2	0.8	8.4-10	147%	0.10
H (2)	11.0	0.0	12.5	0.7	12-13	14%	0.37
<b>Total (86)</b>	<b>4.2</b>	<b>2.7</b>	<b>9.0</b>	<b>1.4</b>	<b>6.7-13</b>	<b>198%</b>	<b>&lt;0.001</b>

**Table 1. Comparison of expected and laboratory values.** Means and ranges given in grams per serving. Mean difference was calculated as the percent difference of the laboratory value over the expected value. Wilcoxon signed-rank test (two-tailed) was used to determine the p-value between label and laboratory values for kombucha products.

The frequency of meeting expected values for total sugars (no more than 20% above label) per manufacturer was evaluated (Table 2). Four of eight manufacturers reported here had no products meeting expected values for sugars, while three manufacturers met expected values for all products tested. Overall, 26% of all products tested met expected values for total sugars.

Manufacturer	Met Expected Value	Did Not Meet Expected Value	Total	% Met Expected Value
	n	n	n	%
A	0	31	31	<b>0%</b>
B	0	21	21	<b>0%</b>
C	4	7	11	<b>36%</b>
D	9	0	9	<b>100%</b>
E	3	0	3	<b>100%</b>
F	0	5	5	<b>0%</b>
G	0	4	4	<b>0%</b>
H	2	0	2	<b>100%</b>
<b>TOTAL</b>	<b>18</b>	<b>68</b>	<b>86</b>	<b>26%</b>

**Table 2. Frequency of kombucha samples meeting sugars label claim.**

Products meeting/not meeting the expected value were defined as those containing no more than 20% greater sugars than listed on the product label.

Within the study, separate batches of samples from Manufacturer “A” were sent to multiple laboratories at different times. These labs reported similar differences between laboratory and expected values for the products tested (Table 3). Because the laboratories did not test all of the same materials, some differences between lab results was expected. However, both labs independently found the set of samples tested to be significantly above the expected value.

n	Expected Value		Laboratory Value		Expected	p-value	Mean % Above
	Mean	S.D.	Mean	S.D.			
Lab #1	19	2.2	0.6	9.3	0.8	337%	0.0001
Lab #2	11	2.4	0.8	7.9	1.0	262%	0.004
Lab #3	1	2	NA	9	NA	350%	NA

**Table 3. Comparison of expected and laboratory values** for products from Manufacturer A tested at multiple laboratories using different HPLC methods. Mean difference between expected and laboratory value was

calculated as a percentage over label claim. S.D. = standard deviation. NA = not applicable due to insufficient 'n'.

To determine within-lab method precision to a preliminary extent, two bottles of the same manufacturing lot from seven kombucha products were analyzed for sugars by two labs (Table 4). Duplicate results were generally within 5% of each other, suggesting acceptable levels of precision were met.

Expected Value (g/serving)	Duplicate Result	Laboratory
9	8.0, 8.0	1
2	9.9, 9.9	1
2	8.7, 8.3	1
5	9.4, 9.3	2
2	7.0, 6.9	2
2	8.1, 7.9	2
2	7.9, 7.7	2

**Table 4. Duplicate results of total sugars** on different bottles from the same manufacturer product and lot number.

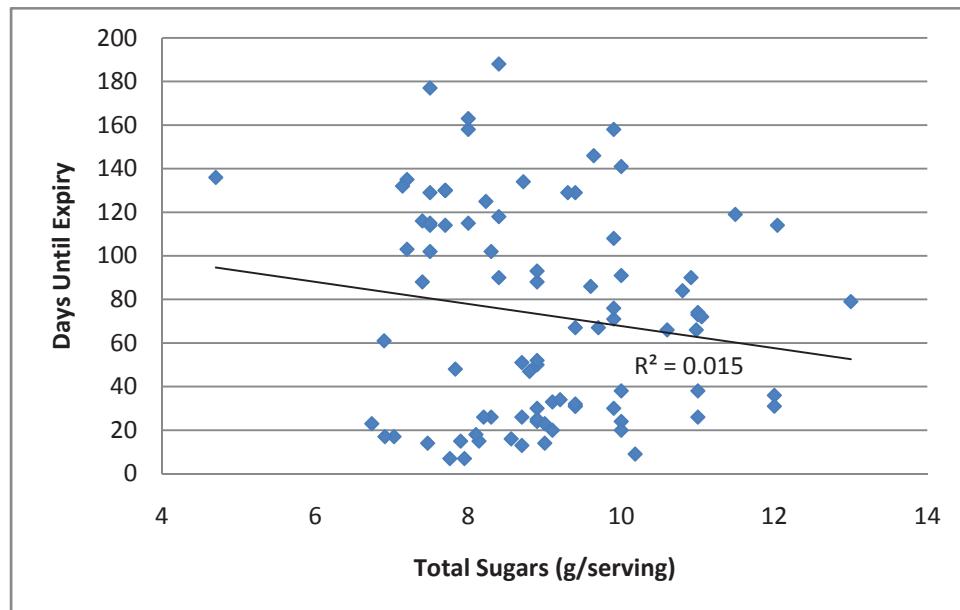
Although sugar alcohols are not commonly thought to be produced during kombucha fermentation, there is a possibility for sugar alcohols to potentially interfere with total sugars results. Six representative samples were analyzed for sugar alcohols by Laboratory #1 (Table 5). One sample containing sorbitol slightly greater than the limit of quantitation was re-tested in triplicate to confirm its presence. The level of sorbitol detected is not expected to interfere with total sugars results at the scale observed in this study.

	Units	1	2	3	4	5	6
Sorbitol	g / 100g	<0.0500	<b>0.0616</b>	<0.0500	<0.0500	<0.0500	<0.0500
Mannitol	g / 100g	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
Maltitol	g / 100g	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
Erythritol	g / 100g	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
Xylitol	g / 100g	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
Lactitol	g / 100g	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
Isomalt GPS	g / 100g	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
Isomalt GPM	g / 100g	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
<b>Total sugar alcohols</b>	g / 100g	<b>&lt;0.0500</b>	<b>0.0616</b>	<b>&lt;0.0500</b>	<b>&lt;0.0500</b>	<b>&lt;0.0500</b>	<b>&lt;0.0500</b>

**Table 5. Sugar alcohols content of six selected kombucha products from four manufacturers.**

It is possible that changes in sugar content may occur over the shelf life of products undergoing active fermentation. Although this study did not include shelf life studies, a simple linear regression was used to determine to a preliminary extent whether the amount of shelf life remaining may be related to the amount of sugar content (Table 6). However, no significant

correlation between remaining shelf life and sugars content was observed ( $r^2 = 0.015$ ,  $p=0.27$ ).



**Table 6. Total sugar content of all kombucha samples versus days until expiry.**  
Simple linear regression was performed. No significant correlation was observed between laboratory values of sugar content and remaining shelf life.

## DISCUSSION

The rapid success of kombucha in the U.S. has coincided with questions of product consistency and quality. For example, the production of low levels of ethanol during fermentation has made kombucha a target of regulatory discussion in the United States. In this study, products from five of eight manufacturers contained higher than expected levels of sugars, i.e., greater than 20% of label on the average.

Sugars in foods and beverages, including fermented beverages like beer, wine and vinegar have been adequately tested for decades using the same or similar HPLC methodology used in this study. In this study, duplicate samples run consecutively of the same manufacturing lots appeared to show an acceptable precision. Also, similar results obtained on the same products prepared with different extraction procedures at different labs suggest that differences in sample preparation before analysis do not impact results for kombucha.

Sugar alcohols may appear on the same chromatograms as sugars, and previous reports have suggested some possibility for interference. Based on the data reported here, sugar alcohols are not present in kombucha at levels that would be expected to substantially affect sugars results.

The purpose of this study was not to determine changes in sugar content of kombucha during shelf life. However, it has been suggested that the composition of 'live' fermented products

may change over the shelf life. Although systematic time-course data on the same samples was not performed in this study, a simple linear regression analysis based on the measured laboratory value versus remaining shelf life showed no significant correlation ( $r^2=0.015$ ,  $p=0.27$ ). More studies should be done to determine whether there are discernible changes in the sugar content over the duration of product shelf life.

A number of controls were employed in this study to control for potential variations in sample source, transportation and storage, preparation, composition and laboratory methodology. This included the use of multiple laboratories, methods, sample sources, and testing dates. All data and calibrations met laboratory suitability requirements. Upon review of selected sample and standard chromatograms, no interfering peaks were observed. Multiple laboratories performed the analysis using accepted AOAC methodologies, and variation in extraction steps among the methods did not appear to impact results.

This study did not intend to provide a systematic analysis of all kombucha products on the market. Because products from manufacturers with greater than expected sugars in the initial round of testing were selected for additional confirmation testing, this data in its aggregate has limited usefulness as a reliable overall indicator of sugar content in commercial kombucha products.

The primary conclusions from this study include that: 1) the majority of the kombucha products tested contained higher than expected levels of sugars (greater than 20% of label) on the average; and 2) testing for sugars in kombucha by HPLC appears to meet acceptable levels of precision and accuracy.

Acknowledgments: This study was financially supported by KeVita Inc.

## REFERENCES

1. AOAC 982.14 Glucose, Fructose, Sucrose and Maltose in Presweetened Cereals
2. AOAC 980.13 Fructose, Glucose, Lactose, Maltose and Sucrose in Milk Chocolate
3. AOAC 977.20 Separation of Sugars in Honey
4. Chen C. and Liu B.Y. Changes in major components of tea fungus metabolites during prolonged fermentation. (2000) J Appl. Microbiol. 89;834-839
5. Ebersole B, Schmidt R, Eckert M. Single laboratory validation of ethanol in kombucha. (2016) J. AOAC, Submitted manuscript.
6. Lopez EF, Gomez EF. Simultaneous determination of the major organic acids, sugars, glycerol and ethanol by HPLC in grape musts and white wines. (1996). J Chrom Sci. 34:
7. Markov S. L., Cvetkovic D.D., Velickovic A.S. The availability of a lactose medium for tea fungus culture and kombucha fermentation. (2012) Arch. Biol. Sci. Belgrade 64(4);1439-1447
8. Nummer BA. Kombucha brewing under the Food and Drug Administration model Food Code: risk analysis and processing guidance. (2013) J Environ Health. 76(4):8-11.

9. Reiss J. Influence of different sugars on the metabolism of the tea fungus (1994); Z. Lebensm. Unters. Forsch. 198:258-261
10. Sanarico D, Motta S, Bertolini L, Antonelli LA. HPLC Determination of organic acids in traditional balsamic vinegar of Reggio Emilia. (2006). J. Liq. Chrom. Rel. Tech. 26(13):2177-2187
11. Sievers M, Lanini C., Weber A., Schuler-Schmid U., Teuber M. Microbiology and fermentation balance in a kombucha beverage obtained from a tea fungus fermentation. (1995). System. Appl. Microbiol. 18;590-594
12. Wang W, Tang S, Zhu X. Determination of sugars in vinegar by HPLC and difference analysis. (2014) Food Sci Tech. 7:300-303

**Sugars in Kombucha - Data Table**

Store	Store Location	Purchase Date	Manufacturer	Flavor	Lot Code	Enjoy by	Report Date	Label Value (g/serving)	Laboratory Result (g/serving)	Sugars (% of Label Value)
1	Inverness, FL	6/28/2016	A	1	1	8/5/2016	7/12/2016	2	10	400%
3	Boulder, CO	6/28/2016	A	2	2	8/5/2016	7/12/2016	2	8.9	345%
4	Ventura, CA	6/28/2016	A	2	3	8/6/2016	7/7/2016	2	8.9	345%
5	Carmel, IN	6/28/2016	A	2	4	8/7/2016	7/12/2016	2	8.7	335%
5	Carmel, IN	6/28/2016	A	2	5	8/7/2016	7/12/2016	2	8.3	315%
6	Lititz, PA	6/28/2016	A	2	6	8/7/2016	7/12/2016	2	8.2	310%
7	Indianapolis, IN	5/3/2016	A	2	7	6/11/2016	5/27/2016	2	8.14	307%
7	Indianapolis, IN	5/3/2016	A	2	7	6/11/2016	5/27/2016	2	7.9	295%
1	Inverness, FL	6/28/2016	A	2	8	8/12/2016	7/12/2016	2	9.4	370%
2	Carmel, IN	4/4/2016	A	2	9	5/14/2016	4/11/2016	2	9.1	355%
2	Carmel, IN	4/4/2016	A	2	9	5/14/2016	4/21/2016	2	9.0	350%
4	Ventura, CA	5/12/2016	A	2	10	6/17/2016	6/3/2016	2	7.47	274%
9	Carmel, IN	5/3/2016	A	3	11	6/3/2016	5/27/2016	4	7.95	99%
9	Carmel, IN	5/3/2016	A	3	11	6/3/2016	5/27/2016	4	7.76	94%
8	Boulder, CO	6/28/2016	A	3	12	8/7/2016	7/12/2016	4	11	175%
6	Lititz, PA	6/28/2016	A	3	13	7/25/2016	7/12/2016	4	8.7	118%
1	Inverness, FL	6/28/2016	A	4	14	8/12/2016	7/12/2016	2	9.4	370%
1	Inverness, FL	6/28/2016	A	5	15	8/6/2016	7/12/2016	2	8.9	345%
4	Ventura, CA	5/12/2016	A	6	16	6/12/2016	6/3/2016	2	10.18	409%
7	Indianapolis, IN	5/3/2016	A	6	17	6/13/2016	5/27/2016	2	7.03	252%
9	Carmel, IN	5/3/2016	A	6	17	6/13/2016	5/27/2016	2	6.91	246%
1	Inverness, FL	6/28/2016	A	6	18	8/13/2016	7/12/2016	2	9.4	370%
8	Boulder, CO	6/28/2016	A	7	19	8/31/2016	7/12/2016	2	8.9	345%
4	Ventura, CA	5/12/2016	A	7	20	7/20/2016	6/3/2016	2	8.80	340%
9	Carmel, IN	6/28/2016	A	7	21	7/26/2016	7/12/2016	2	9.0	350%
4	Ventura, CA	6/28/2016	A	7	22	8/28/2016	7/7/2016	2	8.9	345%
9	Carmel, IN	6/28/2016	A	8	23	8/1/2016	7/12/2016	2	9.1	355%
6	Lititz, PA	6/28/2016	A	8	24	8/1/2016	7/12/2016	2	10	400%
4	Ventura, CA	6/28/2016	A	8	25	8/14/2016	7/7/2016	2	11	450%
10	Carmel, IN	5/3/2016	A	8	26	6/19/2016	5/27/2016	2	6.74	237%
4	Ventura, CA	5/12/2016	A	8	27	6/19/2016	6/3/2016	2	8.56	328%
9	Carmel, IN	6/28/2016	B	9	28	9/21/2016	7/12/2016	2	9.9	395%
11	Oxnard, CA	6/28/2016	B	9	28	9/21/2016	7/7/2016	2	9.9	395%
11	Oxnard, CA	6/28/2016	B	10	29	10/23/2016	7/7/2016	3	9.9	230%
11	Oxnard, CA	6/28/2016	B	11	30	8/10/2016	7/7/2016	2	9.2	360%
9	Carmel, IN	6/28/2016	B	12	31	11/24/2016	7/12/2016	2	7.2	260%
4	Ventura, CA	6/28/2016	B	12	32	11/14/2016	7/7/2016	2	7.7	285%
11	Oxnard, CA	6/28/2016	B	12	33	12/21/2016	7/28/2016	2	9.64	382%
2	Carmel, IN	4/4/2016	B	13	34	6/21/2016	4/21/2016	2	6.9	245%
11	Oxnard, CA	6/28/2016	B	13	35	12/7/2016	7/28/2016	2	7.14	257%
9	Carmel, IN	6/28/2016	B	13	36	12/17/2016	7/12/2016	2	8.0	300%
4	Ventura, CA	6/28/2016	B	13	36	12/17/2016	7/7/2016	2	8.0	300%
11	Oxnard, CA	6/28/2016	B	14	37	10/1/2016	7/7/2016	3	9.6	220%
11	Oxnard, CA	6/28/2016	B	15	38	11/25/2016	7/7/2016	2	10	400%
3	Boulder, CO	6/28/2016	B	15	39	9/17/2016	7/12/2016	2	9.4	370%

11	Oxnard, CA	6/28/2016	B	16	40	10/20/2016	7/28/2016	3	10.8	260%
9	Carmel, IN	6/28/2016	B	16	41	8/11/2016	7/12/2016	3	9.9	230%
3	Boulder, CO	6/28/2016	B	16	42	9/23/2016	7/12/2016	3	11	267%
11	Oxnard, CA	6/28/2016	B	17	43	10/2/2016	7/28/2016	3	10.6	253%
4	Ventura, CA	6/28/2016	B	17	44	10/6/2016	7/7/2016	3	10	233%
11	Oxnard, CA	6/28/2016	B	18	45	10/3/2016	7/7/2016	3	8.9	197%
11	Oxnard, CA	6/28/2016	B	19	46	9/19/2016	7/7/2016	3	11	267%
4	Ventura, CA	6/28/2016	C	20	47	8/12/2016	7/7/2016	7	12	71%
4	Ventura, CA	5/12/2016	C	20	47	8/12/2016	6/7/2016	7	10.98	57%
4	Ventura, CA	5/12/2016	C	21	48	10/19/2016	6/7/2016	6	8.72	45%
4	Ventura, CA	5/12/2016	C	22	49	8/18/2016	6/7/2016	7	11.05	58%
4	Ventura, CA	5/12/2016	C	23	50	10/4/2016	6/7/2016	7	11.49	64%
4	Ventura, CA	6/28/2016	C	24	51	7/25/2016	7/7/2016	7	8.1	16%
4	Ventura, CA	5/12/2016	C	24	51	7/25/2016	6/7/2016	7	7.83	12%
4	Ventura, CA	5/12/2016	C	25	52	9/29/2016	6/7/2016	8	12.04	51%
4	Ventura, CA	5/12/2016	C	26	53	10/10/2016	6/7/2016	8	8.23	3%
4	Ventura, CA	6/28/2016	C	26	54	11/2/2016	7/7/2016	8	8.4	5%
12	Boulder, CO	6/28/2016	C	26	55	12/17/2016	7/12/2016	8	9.9	24%
11	Oxnard, CA	7/13/2016	D	27	56	11/9/2016	7/18/2016	8	7.5	-6%
11	Oxnard, CA	7/13/2016	D	28	57	11/9/2016	7/18/2016	8	7.7	-4%
2	Carmel, IN	7/13/2016	D	29	58	11/24/2016	7/18/2016	8	7.5	-6%
4	Ventura, CA	7/13/2016	D	29	59	10/29/2016	7/18/2016	8	7.2	-10%
4	Ventura, CA	7/13/2016	D	30	60	11/25/2016	7/18/2016	8	7.7	-4%
11	Oxnard, CA	7/13/2016	D	31	61	11/10/2016	7/18/2016	8	8.0	0%
2	Carmel, IN	7/13/2016	D	32	61	11/25/2016	7/18/2016	8	7.7	-4%
4	Ventura, CA	7/13/2016	D	33	63	10/28/2016	7/18/2016	8	7.5	-6%
4	Ventura, CA	7/13/2016	D	34	64	10/28/2016	7/18/2016	8	8.3	4%
6	Lititz, PA	6/28/2016	E	35	65	10/8/2016	7/12/2016	9	7.4	-18%
9	Carmel, IN	6/28/2016	E	36	66	10/13/2016	7/12/2016	9	8.9	-1%
6	Lititz, PA	6/28/2016	E	37	67	11/5/2016	7/12/2016	9	7.4	-18%
12	Lancaster, PA	6/28/2016	F	38	68	9/29/2016	7/12/2016	11	13	18%
12	Lancaster, PA	6/28/2016	F	39	69	8/12/2016	7/12/2016	11	12	9%
4	Ventura, CA	6/28/2016	G	40	70	10/5/2016	7/7/2016	2	8.4	320%
4	Ventura, CA	6/28/2016	G	41	71	8/14/2016	7/7/2016	5	10	100%
4	Ventura, CA	6/28/2016	G	42	72	9/12/2016	7/7/2016	5	9.7	94%
4	Ventura, CA	6/28/2016	G	43	73	8/27/2016	7/7/2016	5	8.7	74%
2	Carmel, IN	6/28/2016	H	44	74	1/5/2017	7/12/2016	5	7.5	50%
13	Boulder, CO	6/28/2016	H	44	75	11/4/2016	7/12/2016	5	7.5	50%
9	Carmel, IN	5/3/2016	H	45	76	10/10/2016	6/3/2016	5	9.4	88%
9	Carmel, IN	5/3/2016	H	45	76	10/10/2016	6/3/2016	5	9.3	86%
4	Ventura, CA	5/3/2016	H	46	77	12/8/2016	6/3/2016	5	8.4	68%
9	Carmel, IN	4/4/2016	I	47	78	9/4/2016	4/21/2016	4	4.7	18%
4	Ventura, CA	5/12/2016	J	48	79	9/5/2016	6/7/2016	11	10.91	-1%

# EXHIBIT 7

Kombucha Dog  
1815 Main Street  
Los Angeles, CA 90031



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Work Order # : W2017-12-041  
Sample (s) Received: December 12, 2017  
Report Printed: December 14, 2017

Analysis Performed at:  
Enartis Vinquiry  
7795 Bell Road  
Windsor, CA 95492

### Analysis Report

Date Analyzed

AH30015	GT'S Synergy Guava Goddess 500 Alcohol	1.05 %V/V	GC*	12/13/17
AH30016	GT'S KombuchaGingerade 501 Alcohol	1.13 %V/V	GC*	12/13/17
AH30017	GT'S Synergy Passionberry Bliss 502 Alcohol	1.09 %V/V	GC*	12/13/17
AH30018	GT'S Synergy Raspberry Chia 503 Alcohol	0.73 %V/V	GC*	12/13/17
AH30019	GT'S Synergy Cosmic Cranberry 504 Alcohol	0.95 %V/V	GC*	12/13/17
AH30020	GT'S Synergy Trilogy 505 Alcohol	0.90 %V/V	GC*	12/13/17
AH30021	GT'S Kombucha Tantric Tumeric 506 Alcohol	1.03 %V/V	GC*	12/13/17
AH30022	GT'S Synergy Mystic Mango 507 Alcohol	0.95 %V/V	GC*	12/13/17
AH30023	GT'S Kombucha Original 508 Alcohol	1.48 %V/V	GC*	12/13/17



Work Order #:	W2017-12-12-041	Analysis Report (cont.)		Page 2 of 3
AH30024 cont.				Date Analyzed
AH30024	GT'S Synergy Gingerberry 509 Alcohol	1.12 %V/V	GC*	12/13/17
AH30025	GT'S Kombucha Koffee 510 Alcohol	0.93 %V/V	GC*	12/13/17
AH30026	GT'S Synergy Strawberry Serenity 600 Alcohol	1.10 %V/V	GC*	12/13/17
AH30027	GT'S Kombucha Living in Gratitude 601 Alcohol	0.63 %V/V	GC*	12/13/17
AH30028	GT'S Kombucha Cayennade 602 Alcohol	1.06 %V/V	GC*	12/13/17
AH30029	GT'S Kombucha Lemonade 603 Alcohol	1.07 %V/V	GC*	12/13/17
AH30030	GT'S Synergy Ginger Chai 604 Alcohol	0.60 %V/V	GC*	12/13/17
AH30031	GT'S Kombucha Heart Beet 605 Alcohol	0.68 %V/V	GC*	12/13/17
AH30032	GT'S Kombucha Multi-Green 606 Alcohol	0.69 %V/V	GC*	12/13/17
AH30033	GT'S Kombucha Lavender Love 607 Alcohol	0.75 %V/V	GC*	12/13/17



Work Order # : W2017-12-12-041

## Analysis Report (cont.)

Page 3 of 3

AH30034 cont.

Date Analyzed

AH30034 GT'S Kombucha Hibiscus Ginger 608

Alcohol

1.04 %V/V

GC\*

12/13/17

AH30035 GT'S Cocokefir Pure 609

Alcohol

0.19 %V/V

GC\*

12/13/17

for Enartis USA

## TTB Certified Laboratory

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